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SUPPLEMENTARY ENUMERATION OF THE CERCOSPORAE.

BY J. B. ELLIS AND B. M. EVERHART.

In addition to the two species described on p. 106, and the eight species on pp. 124 and 125, Vol. I. of this JOURNAL, the following are here given :

CERCOSPORA CRUENTA, Sacc. Mich. II, p. 149. Fungi Ital. tab. 686.

On leaves of *Dolichos* and *Phaseolus*, S. Carolina (Ravenel). Amphigenous, tufts punctiform, scattered on blood-red spots. Hyphæ loosely fasciculate, simple, or forked, subdenticulate above, pale olivaceous. Conidia acicular-obclavate, slightly curved, 60—80 x 4 μ , rather acute above, 6—7-septate, hyaline, becoming olivaceous. Readily recognized by the red spots.

CERCOSPORA FERRUGINEA, FCKL. Symb. Myc. p. 354.

On leaves of *Erigeron tomentosum*. S. Carolina (Ravenel) v. Grev. V, p. 152. Tufts slender, broadly effused, hyphæ very long, creeping, branched, septate, ferruginous. Conidia very long, elongate-clavate, often curved, multiseptate, guttulate, fuscous.

CERCOSPORA GNAPHALIACEA, Cke. Texas Fungi, No. 76.

On leaves of *Gnaphalium*. Texas (Ravenel). Amphigenous. Hyphæ fasciculate, simple, collected in rounded brown spots. Conidia robust, linear, 3—5-septate, hyaline. It is doubtful whether *C. Gnaphalii*, Hark. is distinct from this.

CERCOSPORA SAGITTARIÆ, E. & K., n. s.

On *Sagittaria variabilis*, Kansas (Kellerman). Spots amphigenous, orbicular (.25—.5 cm.) rusty brown, generally whitening in the center, sometimes confluent, margin subindefinite. Tufts amphigenous, more abundant above, minute, scattered. Hyphæ in small tufts, brown, continuous, or sparingly septate, simple, denticulate above. Conidia slender, hyaline, lanceolate, 4—6-septate, 60—80 x 3—4 μ . Closely allied to *C. Callæ*, Pk. and Clint., but distinguished by its orbicular spots, more

erect and darker hyphæ collected in more scanty tufts, and its *narrower* and longer conidia. In *C. Callæ*, the hyphæ are somewhat geniculate above. *Protomyces Sagittariæ*, Fekl., occurs on the same leaves, but not on the same spots, with the *Cercospora*.

CERCOSPORA GAULTHERIÆ, E. & E., n. s.

On living leaves of *Gaultheria procumbens*, Newfield, N. J., July, 1885. Spots large (.5—1 cm.), often marginal, or terminal, gray above, rusty brown below, limited on both sides of the leaf by a narrow purplish border. Hyphæ simple, or sparingly branched, dark, continuous, or 1—3-septate, subdenticulate and subundulate above, growing from a prominent hemispherical, tuberculiform base, 100—120 μ in diam. Conidia cylindrical, continuous and nucleate and 25—40 x 2—2.5 μ as generally seen, but when mature, elongated to 75 μ , and faintly 3—4-septate. Sometimes conidia are seen with a knob-like swelling near the middle, and constricted at the septa.

CERCOSPORA UMBRATA, Ell. & Holway, n. s.

On *Bidens*, Decorah, Iowa, Aug., E. W. D. Holway. Hypophyllous, forming olivaceous patches about .5 cm. diam., without any definite spots, except that the leaf is yellowish above. Hyphæ fasciculate, brown, septate, 80—125 x 3.5—4 μ subdentate above. Conidia hyaline, attenuated, rarely 1—3-septate, 35—55 x 4 μ .

CERCOSPORA SUPERFLUA, Ell. & Holway, n. s.

On living leaves of some undetermined shrub (*Fraxinus* ?). Decorah, Iowa, Aug. 1885. E. W. D. Holway. Spots amphigenous, suborbicular, light brown, (3—6 millim.) definite with the margin a little darker, but the leaf not discolored beyond the limits of the spot. Hyphæ brown, continuous, simple, entire, or sparingly toothed, above, 12—25 x 4—5 μ , collected in little tufts, which are thickly scattered over the spots. Conidia clavate, 3—6-septate, light brown, 40—60 x 5—6 μ at the widest part.

CERCOSPORA CONDENSATA, E. & K., n. s.

On leaves of *Gleditsia triacanthos*, Manhattan, Ks., July, 1884. (Kellerman). Spots amphigenous, small (1—2 millim.), whitening out in the center, especially above, border dark. Hyphæ simple, continuous, brown, nodulose and subdentate above, 30—50 x 4 μ , forming small but dense tufts on the lower face of the spots. Conidia slender, obclavate, brown, multisepte (6—12-septate), 60—115 x 3—4 μ . On the upper face of the spots are less numerous, but larger, dense sphaeriæform tufts of rather coarser hyphæ, bearing, rather sparingly, conidia similar to those on the lower side of the leaf. Distinguished from *C. olivacea* (B. & Rav.) by its different mode of growth.

NEW KANSAS FUNGI.

BY J. B. ELLIS AND W. A. KELLERMAN.

MELANCONIS DASYCARPA, E. & K.—Stroma cortical, scarcely exceeding 1 millim. in diam., without any black circumscribing line. Perithecia 3—8 in a stroma, buried in the substance of the inner bark (.25— $\frac{1}{2}$ millim.), their stout rough cylindric-conical ostiola piercing the mostly stellate-cleft epidermis in a little fascicle without any distinct disk. Asci oblong-cylindrical nearly sessile, 100—115 x 18—20 μ with imperfectly-developed paraphyses. Sporidia biseriate, oblong-cylindrical, slightly curved, uniseptate, nearly hyaline, slightly or not at all constricted at the septum, 25—30 x 8—10 μ , with a slightly oblique, stout, hyaline appendage, 16—20 x 3 μ , at each end. On dead twigs and limbs of *Acer dasycarpum*, Manhattan, Ks., June, 1885. Kellerman, 754. *Stilbospora ovata*, Pers., occurs on the same twigs. This differs from *M. Alni*, Tul. in its smaller stroma, without any of the white substance visible in the disk of that species. The sporidia are also larger than stated in Syll. (18—24 x 5—7 μ). Specimens distributed in Mycotheca Marchica, have spor. only 15—18 x 5—7 μ , and appendages only 6—8 μ long, while specimens from Cooke, though possessing all the other characteristics of *M. Alni*, Tul., have the sporidia 30—38 x 7—8 μ without any trace of appendages, which may have fallen off or been absorbed. In all the specimens of *M. Alni* we have seen, besides the presence of the white grumose-corky substance in the stroma and disk, the perithecia raise the epidermis into little protuberances so as to indicate their position beneath, but this is not the case with the Kansas specimens, besides, the perithecia are perceptibly smaller, and mostly less numerous. For these reasons, and on account of the different host-plant, we are inclined to regard it as a distinct species, rather than as a mere variety of *M. Alni*, Tul.

LEPTOSPHERIA PYRENOPEZOIDES, Sacc. & Speg.—A *Sphaeria*, agreeing well with the description of this species in Michelia I, p. 394, and the fig. in *Fungi Italici* 323, was found on dead herbaceous stems near Manhattan, Kansas, June, 1885. Kellerman, 733. The sporidia, however, remain for some time with only two septa, becoming 3-septate only when fully mature. The specimen in our copy of Mycotheca Veneta 1475, labeled *L. pyrenopezoides*, S. & S., is something else, having oblong-elliptical, 2-nucleate hyaline sporidia 7—8 x 3 μ ,—a species of *Phomatospora*.

SPHÆRELLA LEUCOPHLEA, E. & K.—Perithecia punctiform, minute (70—100 μ), buried in the substance of the leaf, except their slightly projecting perforated apices. Asci oblong, sessile, or nearly so, 75—80 x 7—8 μ . Paraphyses none. Sporidia biseriate, fusiform, hya-

line, 1-septate, and very slightly constricted at the septum, $18-20 \times 3\frac{1}{2} \mu$. On dead leaves of *Baptisia leucophæa*. Manhattan, Kansas, June, 1885. Kellerman, 752. This is different from *Sphaeria baptisiaecola*, Cke., which has shorter asci, mostly not over 55 or 60 μ long, surrounded at first by paraphyses, and which has also shorter ($12-15 \times 3\frac{1}{2}-4 \mu$), yellowish sporidia, and belongs in Saccardo's genus *Didymella*.

SEPTORIA MENTZELLÆ, E. & K.—On living leaves of *Mentzelia nuda*. Western Kansas, Aug., 1885. Kellerman, 775. Spots amphigenous, pale, definite, $\frac{1}{4}-\frac{1}{2}$ cm. diam. Perithecia immersed, visible on both sides of the leaf, black, about 100 μ diam. Spores filiform, subnodulate, nucleolate, $40-60 \times 1\frac{1}{4}-1\frac{1}{2} \mu$.

PHYLLOSTICTA MENTZELLÆ, E. & K.—Occurs on the same leaves, and on similar spots, as the foregoing, and can not, by its external characters, be distinguished from the preceding, unless by its perithecia being mostly *epiphyllous*. The spores are oblong, $5-7 \times 2\frac{1}{2}-3 \mu$, or in some perithecia $5-7 \times 4 \mu$. So far as observed, the *Septoria* and *Phyllosticta* do not occur on the same leaf.

GLOEOSPORIUM STENOSPORUM, E. & K.—On living leaves of *Populus monilifera*, Manhattan, Ks., Sept., 1885. Kellerman, 787. Spots amphigenous, dirty gray, round ($\frac{1}{2}$ cm.), sometimes confluent, with a darker, scarcely raised border. Acervuli punctiform, round, fuscous, at length collapsing, epiphyllous, but also visible on the lower surface of the leaf, mostly collected in a group near the center of the spot. Spores cylindrical, uniseptate, hyaline, curved, $18-20 \times 2\frac{1}{2} \mu$.

NOTE.—Since the paper on *Gloeosporium*, in the September No. of this JOURNAL (Vol. I) was in print, we have received from Dr. Farlow a fragment of an authentic specimen of *Gloeosp. Castagnei*, Lev. (ex. herb. Castagne). This specimen differs from N. A. F. 1172, so far as we can see, only in the larger acervuli. Possibly the spots are a little more definite, but it is difficult to see any real difference between the spores of this and those of the N. A. F. specimen, which should, doubtless, have been labeled *G. Populi*.

ÆCIDIDIUM CALLIRHOES, E. & K.—Hypophyllous, in clusters $\frac{1}{4}-\frac{1}{2}$ cm. in diam. Aecidia at first covered, at length exposed, cup-shaped, pale, margin subentire ($\frac{1}{8}$ millim.). Spores subglobose, pale, $12-18 \mu$. Center of the clusters usually occupied by the spermogonia. On living leaves of *Callirhoe involucrata*, Manhattan, Ks., June, 1885. Kellerman, 740.

ÆCIDIDIUM AMPHIGENUM, E. & K.—Subiculum slightly thickened, and paler. Aecidia collected in suborbicular patches, $\frac{1}{4}$ cm. diam., at first covered, then open, with a subdentate margin, very short and small, scarcely crowded, standing in about equal numbers on each side of the leaf. Spores subglobose, $22-25 \mu$, with a thick epispore. On leaves of *Baptisia leucophæa*, Manhattan, Ks., June, 1885. Kellerman, 748.

NOTES ON POLYPORUS.

BY J. B. ELLIS.

POLYPORUS FRONDOSUS.—A specimen found at West Chester, Pa., Oct. 22d, 1885, was 14 x 12 in., and 9 in. high, the imbricate-cæspitose pilei all arising from a common central subtuberculiform stem, 3 in. thick and about 3 in. high, much branched above, and each branch bearing a flabelliform pileus, 2—4 in. wide. The surface of the pilei was of a slightly sooty tint, indistinctly radiate-striate, surface innate-tomentose, margin revolute in drying. Pilei all dimidiate, flabelliform, or spatulate, often laterally confluent, substance carnose-fibrose, yellowish, moderately tough, so as to bend short without breaking. Substance of the stems also fibrose-carnose and yellowish. The plant can not be called brittle (*fragilis*), nor was there any greenish tinge about it. Odor quite strong, but not disagreeable. Pores nearly milk white when fresh, about $\frac{1}{2}$ millim. diam., *angular* and *sinuous*, margins sublacerate, strongly decurrent on the stems. Spores white, ovate 5—7 x 4 μ . A specimen found at Newfield, at the root of a maple, had the pilei mostly entire, but did not differ otherwise.

POLYPORUS FLAVO-VIRENS, B. & Rav.—This species has also been found quite abundantly at West Chester this season (Aug. to Sept.), and has also been observed at Newfield, N. J., for several years in succession. It is a terrestrial species, and occurs in dry woods. A careful examination of many specimens enables us to make some alterations in the description given in *Grevillea* I, p. 38. The pores are at first invariably *milk white*, but at maturity they become, like the pileus, dirty yellow; they are also quite constantly distinctly *sinuous*, but this character is not so obvious in the mature specimens. The margin of the young pores is finely subfimbriate and at length lacerate. The pores themselves are quite short (2—3 mm.), and often distinctly funnel shaped at maturity. Whole plant firm, pileus excentric or lateral, 4—7 inches across, nearly smooth or coarsely lacerate-squamose, center depressed, margin undulate and sublobate, and the whole plant greenish yellow. Spores white, nearly globose with a single large nucleus, 4—5 μ diameter, basidia clavate, 25 x 5 μ . The pileus is often distinctly marked with zones of a darker color. As far as can be judged from the description* in 26th Rep. N. Y. State Mus., must be very near this, but that is said to have the stem smooth and pores minute. *P. flavo-virens* has the stem roughened by the decurrent pores which can hardly be called minute.

POLYPORUS DEPENDENS, B. & C., Grev. I, p. 37.—This species has been found at Newfield, once under a decaying oak log, and again growing from the upper surface of the hollow in a rotten pine or cedar log. It is a

**P. Peckianus*, Cke. (*P. flavidus*, Pk.)

small but curious species. The soft, spongy pileus, conical in shape and about $\frac{1}{2}$ or $\frac{3}{4}$ of an inch high and broad, is suspended by its vertex or rather by a short stem rising from its vertex, and presents at the first glance much the same appearance as a cluster of *Hemiarcyria rubiformis* (Pers.) after the capillitium and upper part of the sporangia have fallen away, the broad, shallow pores of the *Polyporus* corresponding to the shallow, cup-shaped bases of the sporangia in the *Myxogaster*. The young specimen, before the pileus has expanded, resembles a little brush-like tuft of coarse, rust-colored hairs.

POLYPORUS ELLISII, Berk., Grev. VII, p. 4, appears to be a very rare species, only two specimens, so far as we know, having yet been found—the one from which the description in Grevillea was drawn, and one found near the same time by Mr. Ravenel in South Carolina.

J. B. E. & B. M. E.

NOTES ON FLORIDA FUNGI--No. 1.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

My experience in the study of the Fungi has been short, but I may remark *sweet*, if the satisfaction derived from finding a vast multitude of (to me) new forms amounts to anything. Then, there is the additional pleasure of causing others who make a special study of the Fungi, to rejoice in having placed in their hands elegant specimens *in quantity*, thus enabling them to make full investigations and comparisons calculated to determine definitely obscure points as to little known species. Florida offers an inviting field to the naturalist in any department, but not until lately was I aware that so much of interest is to be found in the *cryptogamic flora* of this section. Stimulated into action by the zeal of the editor of the N. A. F., I devoted a portion of last winter to collecting fungous forms in connection with the lichenoid species in which I had just become interested. As a result, more than one hundred and fifty species rewarded my work. The whole of these were obtained within no greater distance than two miles from my home in Jacksonville. If this is astonishing, what might we expect were explorations made over larger areas, and particularly in the semi-tropical portions of the State? The first fact impressed upon my mind was, the teeming abundance of some species. The most beautiful, perhaps, and the first to attract my notice, was *Xerotus viticola*, B. & C., found *exclusively* on decaying and dead *Carpinus Americana*. This winter I have seen none as yet. It would be safe to say that I sent Mr. Ellis over ten thousand specimens. *Polyporus gilvus*, Schw., and *P. scruposus*, Fr., abundant. These two species are claimed to be identical, and I must defer to authority, while I stand in the forest and, observing their distinct habits of

development, wonder why this is so. They frequent entirely *Quercus aquatica*—decaying or dead. *Polyporus licnoides*, Mont., is an example of a tropical migration; it is rare. *P. carneus*, Nees., rare. *P. niphodes*, B. & Br., prolific on dead limbs. *P. Salleanus*, Berk., rare. *P. plebeius*, Berk., not abundant, but very fine and large. I have specimens over seven inches across. Then there are others of this genus which I omit now. Neglecting for the present a number of genera, I will refer to the curious *Glenospora Curtisii*, Berk., and the *Thelephora pedicellata*, Schw.—both found on small *Quercus aquatica* and *Myrica cerifera*, which in this locality seem to monopolize their attentions. Station low, wet, or damp grounds. *Grandenia tuberculata*, B. & C., occurs sparingly on rotten branches. The leaves of various trees and shrubs swarm with certain species. And whether one looks above or below, he will not be disappointed.

AMANITINE AND ITS ANTIDOTE.*

BY CHARLES MACILVAINE, OF PHILADELPHIA.

The many cases of severe illness caused by toadstool eating, and the very general lack of knowledge as to the nature of the poisons producing them, as well as the proper treatment to be pursued, as designated by the peculiar symptoms attaching to each poison of the several noxious varieties of toadstools, render it desirable that what is thus far ascertained about them should be widely published and known to the profession.

No physician called upon to give relief in a case of toadstool poisoning can do so intelligently, or be certain of success, unless he can distinguish, from a sample of the toadstool eaten, what particular poison is at work; or, from the symptoms, to which family of toadstools the illness is ascribable. With this knowledge in his possession, he holds the key to the situation, and, by its use, can stay the simple suffering produced by particular toadstools, or preserve his patient from what, without it, would be certain death, if any of the deadly kinds have been eaten.

It is the duty of the mycologist to inform the physician how to distinguish between those varieties of toadstools which create simply local troubles in the human system, and those whose poisonous principles are absorbed by it to its destruction.

The toadstools likely to be eaten are, Agarics (those having gills, or plaits, under their caps), Polyporei and Boleti (having tubes and sponge-like surfaces beneath their caps), Hydnei (having spike-like projections

* This article, a portion of which is here reproduced, was printed in the *Medical and Surgical Reporter*, Dec. 12th, 1885.

underneath), *Clavaria* (which are club-shaped, or of coral forms, having thin spore-bearing membranes upon their upper surfaces), and *Lycoperdons*, or common puff-balls.

The *Hydnei* and *Clavaria* are nearly all edible. None of them are known to contain poisonous principles; but disturbances may arise from eating the tough and bitter varieties.

All of the puff-balls (*Lycoperdons*), having white flesh, are excellent, tender and nutritious, so long as the flesh is white; but when the flesh changes from white to yellow upon being cut or broken, it becomes bitter and unpleasant to the taste, and in that and later stages of age or decomposition, eating of them would be likely to produce effects analagous to those from eating stale or rotten vegetables. Those puff-balls dark inside when young (*Scleroderma*) are not considered edible: neither is it determined that they are not. No authority brands them as noxious; but they are coarse and uninviting.

Of the *Boleti*, there are many luscious kinds; with mycophagists, they are great favorites; by the community at large, they are not so well known, and are at present rarely eaten in this country; in Europe, they form a prominent article of food. Several varieties of them are supposed to be non-edible, and many well-versed writers pronounce them highly pernicious; yet every toadstool season, careful experimenters remove suspected members of the family from the black-list. There is no recorded case of death from toadstool-poisoning that has been traced to a *Boletus*; but that some of them contain a bitter, acrid, or slimy, principle which is hurtful, but which yields to such ordinary remedial agents as are suggested by the symptoms, there is no doubt.

The noxious varieties of *Boleti*, as a rule, are bitter, and all change color to red or blue when cut or broken. This change of color should not indicate to the physician that the *Boletus* is poisonous, unless it is accompanied by a distinctly bitter taste; it should, however, put him on his guard.

Of all the foregoing families of toadstools, it may be said that no recorded case of poisoning is ascribed to them. Every year the public journals chronicle deaths from toadstool eating, but they never mention what species of toadstool occasions them. It would be of great practical value if, whenever possible, this information were given to the public, and fresh samples of the injurious fungus sent to some mycologist for positive identification.

Many toadstools, like most edible things, cause sickness, not because they contain an inherent poison, but for the reason that they are frequently overloaded with seasoning and rich additions, eaten in large quantities, when in an improper condition for food, owing to decomposition having set in, the leathery nature of some varieties, or want of sufficient cooking. Mr. Julius A. Palmer, of Boston, whose large experience makes him an authority upon the subject, advises the use of sweet

oil and whisky, in equal proportions, in all cases where simply abdominal and intestinal derangements occur from toadstool eating.

The remaining family of toadstools, the Agaricini, or gill-bearing, has more members than the sum of all the others of which individuals are eaten. To it belong the common mushrooms, *Agricus campestris* and *Agriens arvensis*, together with many other members possessing high flavor and excellent qualities.

It is from this family that the masses gather for their tables, and in this family that real danger from toadstool poisoning exists. It contains a small genus consisting of about thirty members, known as *AMANITA*, eight of which are known to be edible, and at least five to contain a deadly alkaloid, designated under the several names of *Muscarine*, *Bulbosine* and *Amanitine*.

This genus has distinguishing marks which cannot be mistaken, and should be known by every one. All of its members have gills which, with one exception, an edible variety having yellow gills—*Amanita caesaria*—are white at all stages of their growth. Their caps, which are convex, concave, or umbonate, generally show remains of an investing membrane existing as warts, scruff, or scales, which are easily removable by rubbing, and leave the smooth, satin-like skin intact. The flesh is white, tasteless, and almost scentless in young specimens. In older specimens, or soon after gathering, a strong and unpleasant odor generates.

(To be continued.)

NEW LITERATURE.

BY W. A. KELLERMAN.

“UEBER DAS VERSCHWINDEN GEWISSE INSEKTEN INFOLGE DER EINWANDERUNG DER PUCCINIA MALVACEARUM, MONT.” Von Dr. F. Ludwig, in Greiz. *Hedwigia*. 1885, Heft V.

This parasite appeared first in 1875, in Elsterthal, near Greiz, on the wild Malvas. In the following year it spread rapidly, and attacked also the cultivated species of *Malva*. Such devastation ensued that Dr. Ludwig in 1882 urged the adoption of ordinances looking to the destruction of the parasite. These were not as effectual as desired, and at present, in many places the cultivated species, as well as the wild species, *M. neglecta* and *M. sylvestris*, have disappeared in consequence. A similar case was reported to Dr. Ludwig by Dr. J. G. Otto Tepper, of Norwood, in South Australia. A few years ago, the *Puccinia malvacearum* found its way to this part of Australia. The *Lavatera plebeja* flourished there exuberantly at the time, but now is seldom seen. Curiously enough, however, *Malva rotundifolia* has taken its place in spite of the parasite. With *Lavatera*, have also disappeared certain insects

that visited its flowers in myriads, notably a beautiful metallic beetle. *Lamprima*. In Europe, there are several insects that derive their nourishment, partly or wholly, from species of *Malvaceæ*; for example, *Haltica malvæ*, *H. fuscipes*, *H. fuscicornis*, *Apion malvarum*, *A. malvæ*, *A. æneum*, *A. radiolus*, *Lixus angustatus*, *Hesperia malvarum*, *Ortholita cervinita*, *Gelechia malvella* and *Tortrix althæana*. A thorough study will doubtless reveal the fact that certain insects have either entirely disappeared, or accommodated themselves to other plants, bringing injury or profit.

“MYKOLOGISCHE NOTIZEN.” Von Dr. F. Ludwig. *Irmischia*, No. 10, 1885.

“AANWINNSTEN VOOR DE FLORA MYCOLOGICA VAN NEDERLAND.” IX en X. Door C. A. J. A. Oudemans. Vervolg van Bijdrage VIII. in *Ned. Kr. Arch.* 2e Serie III, p. 236-257. Seventy-six pages: three plates.

The species number 230, accompanied by observations, and in many cases with the technical descriptions. Eighteen species are illustrated by lithographic figures. The new genera given are as follows:—

HYALOSTIBUM, Oudemans.—*Stroma teretiusculum*, nonnumquam paulum complanatum, apice capitato-conidiophorum, e cellulis parenchymatosis (isodia-metricis fere) polygonis, achromis, hyalinis conflatum. Conidia minuta muco primitis obvoluta.

MONACROSPORIUM, Oudemans.—Mycelium repens vage et pluries ramosum, ramis septatis. Hyphæ conidophoræ erectæ, achromæ, continuæ vel septatæ, apice unicum tantum conidium achromum septatum gerentes. Affinis gen. *Pyricularia*, Sacc. (*Michelia* II. 20) sed sapro-genum.

“BEITRÄGE ZUR PILZFLORA VON MISSOURI.” Von Dr. G. Winter und C. H. Demetrio. Serie I. *Hedwigia*, 1885, Heft V. Sept. u. Oct.

An enumeration of 350 species of fungi, collected by Rev. C. H. Demetrio, near Perryville, Mo. Dates, host-plants, also descriptions in Latin of new species, are given. See *JOURNAL OF MYCOLOGY*, Vol. I. pp. 121-6 for the new species.

“NEW BRITISH FUNGI,” by M. C. Cooke. *Grevillea*, Dec., 1885.

“VALSA VITIS, AGAIN,” by M. C. Cooke, l. c.

This is another attempt on the basis of authentic specimens from Schweinitz himself, to clear up all doubts as to Schweinitz's *Sphaeriae* of the vine. The synonymy is given as follows:—

DIATRYPE (*VALSARIA*) *VITICOLA*. Schw. *Sphaeria viticola*, Schw. *Diatrype viticola*, Berk. *Valsaria viticola*, Sacc. Syll., No. 2812.

VALSA (*EUTYPELLA*) *VITIS* (Schw). *Sphaeria vitis*, Schw. *Valsa vitis*, Cke. *Sphaeria viticola*, Mont. *Eutypa viticola*, Sacc. Syll., No. 669. *Sphaeria propagata*, Plow. *Cryptosphaeria propagata*, Sacc. Syll., No. 687.

VALSA VITIGERA, Oke. Valsa vitis, Fekl.

"SYNOPSIS PYRENOMYCETUM," l. c., continued from p. 17.

"FUNGI EUROPÆI ET EXTRAEUROPÆI," 34th Cent.

Dr. Winter gives in this Century 43 specimens of American species. Latin descriptions accompany the following new species: *Aecidium Allicolum*, Winter, on *Allium stellatum*, Missouri; *Uromyces affinis*, Winter, I and III, on *Hypoxis erecta*, Missouri; *Lizonia* (?) *inæqualis*, Winter, Brazil; *Pleospora pezizoides*, Cesati, Italy; *Valsaria stellulata*, Romell, Sweden; *Endoxyla Populi*, Romell, Sweden; *Uredo flavidula*, Winter, Brazil; *Blitridium* (?) *subtropicum*, Winter, Europe; *Meliola Niessleana*, Winter, Europe; *Nectria aureola*, Winter, parasitic on the *Meliola Niessleana*.

The two American species are described as follows:—

5 *AECIDIUM ALLICOLUM*, Winter.—Pseudoperidia dense stipata, acervulos elongatos, plerumque caulem ambientes sæpeque eum parum tumeficientes formantia, breve cylindrica, sursum sæpe parum dilatata, marquine crenato, subinciso, erecto vel parum recurvato, albida, ca. .5 millim. alta. Sporæ rotundato-angulatæ, aurantiacæ, 21—25 μ diam., minutissime et dense verruculosæ. Ad folia scaposque vivos *Allii stellati*. Perryville, Mo., Mai. 1883, leg. C. H. Demetrio.

6 *UROMYCES AFFINIS*, Winter.—I *Aecidium*: Pseudoperidia gregaria, acervolos rotundatos vel plus minusve elongatos, sæpe laxos formantia, brevissime cylindrica vel fere patellæformia, margine inciso, erecto, albida ca. .25 millim. alta. Sporæ rotundato-angulatæ, aurantiacæ, minutissime verruculosæ, 17—23 μ diam. — III, Teleutosporæ: Acervuli sparsi v. gregarii, non raro confluentes, elliptici vel plus minusve elongati, primo epidermide tecti, demum erumpentes, pulveracei, fuscæ. Sporæ ovatæ, ellipsoideæ vel oblongæ, non raro irregulares vel pyriformes, membrana tenuissima æquali, ad apicem vel laterale (plerumque) apiculo brevi, conico, subhyalino, præditæ, fuscæ, 21—30 μ longæ, 14—21 μ crassæ, episporio longitudinaliter striato, pedicello sublongo, valde fragili, hyalino suffultæ. In foliis scapisque vivis *Hypoxidis erectæ*, Perryville, Mo., Mai, 1883, leg. C. H. Demetrio.

Observ.: Diese Art steht in der Teleutosporenform dem *Uromyces Erythronii*, DC. sehr nahe, der sich wesentlich nur durch etwas grossere Sporen auszeichnet, Dagegen sind die *Aecidien* beider Arten ganz verschieden. Mit *Uromyces Hypoxides*, Cooke, in *Grevillea* X, p. 127, hat unsere Art nichts gemein.

CORRECTION.—On p. 152 (Vol. I), in the note after *Patellaria subvelate*, E. & E., instead of *preceeding*, read *following*.

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No. 2.

THE PHYLLOSTICTAS OF NORTH AMERICA.

BY GEORGE MARTIN.

PHYLLOSTICTA, PERS.; FRIES. S. M., 2, p. 257.

(Etym. *phyllon* leaf and *stictos*, pricked or spotted, a punctate or spotted leaf.) Perithecia lenticular, thinly membranaceous, covered by the epidermis, but often protruded, punctiform, growing in discolored areas of leaves, and rarely of branches. Sporulæ small, ovoid, entire, hyaline, or light green; basidia very small, or none. SYLLOGE FUNGORUM, 3, p. 3.

They have been separated into two classes, for convenience:

A. Those found on trees, shrubs or woody plants.

B. Those found on herbaceous plants.

Descriptions that have been copied without being verified are enclosed in quotation marks.

A. Those found on trees, shrubs or woody plants.

1. PHYLLOSTICTA ACERICOLA, Cke. & Ell. Grev., p. 61.

(*Sphæropsis minima*, B. & C.) Grev., III, p. 2.; Ellis, N. A. F., No. 534.,

Epiphyllous; spots pallid. 5—8 millim. in diam., border purple; perithecia brown-black, globose, scattered. 120 μ ; sporulæ ovate, hyaline, 8—9 x 5—6 μ . On maple leaves.

2. PHYLLOSTICTA ABORTIVA, E. & K. Journ. Mycol., 1, 4.

Spots brown, suborbicular, .25—1 cm., with a definite, darker colored, scarcely raised margin; perithecia innate, punctiform, minute, black, and thickly scattered over the spots on both sides of the leaves; sporulæ imperfectly developed. On leaves of *Menispermum Canadense*, Kansas.

3. PHYLLOSTICTA AFFINIS, E. & K. Am. Nat. 17, p. 1115.

Spots brown, lighter in the center, elongate or angular, .5—1 cm., border dark, elevated; perithecia yellowish, depressed, rather large, few, subcentral; sporulæ oblong, or oblong-elliptical, 4—6 x 2 μ . On Sassafras leaves. Probably only a synonym of *P. Sassafras*. Cke.

4. PHYLLOSTICTA AMPELOPSIDIS, E. & M. N. A. F., No. 1169.

Spots light brown, subcircular, soon breaking out, 2—5 millim., border darker, narrow; perithecia dark brown, epiphyllous, scattered, mostly circinate in the spots, 100—150 μ ; sporulæ hyaline, oval, ends obtuse, nucleate, 9 x 6 μ , exuding in white masses. On leaves of *Ampelopsis quinquefolia*. Pa. & N. J. "May be a variety of *P. Labruscæ*."

5. PHYLLOSTICTA ASIMINÆ, E. & K. N. A. F., No. 1164; Am Nat., 17 p., 1165.

Spots pale brown, irregular, .5—1 cm., border dark, narrow, raised; perithecia black, subglobose, barely erumpent, epiphyllous, scattered, 100—125 μ in diameter; sporulæ obovate, subhyaline, tinged with green, 7—9 x 5—6 μ . On leaves of *Asimina triloba*. Ohio.

6. PHYLLOSTICTA CATALPÆ, E. & M. N. A. F., No. 1368; Am. Nat. 18 p., 189.

Spots pale brown, circular, 5—7 millim. in diameter, border darker; perithecia brown, lenticular, epiphyllous, scattered, often sterile, 112 x 84 μ ; sporulæ subhyaline, oval, 5—7 x 2½—4½ μ . On leaves of *Catalpa bignonioides*. Pa.

7. PHYLLOSTICTA CIRCUMVALLATA, Winter, Journ. Mycol., I, p. 123.

Spots grey, round, 5 millim. in diameter, border dark brown, elevated; perithecia scattered, mostly epiphyllous, lenticular, black, membranaceous, 100—120 μ in diameter; sporulæ elliptic, ends acuminate, hyaline, continuous, with two large nuclei, 7—9 x 3½—4 μ . On leaves of *Liriodendron Tulipifera*. Missouri.

8. PHYLLOSTICTA CLETHRICOLA, E. & M. Am. Nat., 1882, p. 1002.

Spots pale brown, 2—10 millim. in diameter; perithecia erumpent, amphigenous; sporulæ subhyaline, ovate, guttulate, 9 x 6 μ . On leaves of *Clethra alnifolia*. N. J.

9. PHYLLOSTICTA CORNICOLA (DC.) Rabh. Torrey Bull, 6. p., 351.

Spots epiphyllous, large, dark red, changing to pale in the center; perithecia few, punctiform, lenticular, erumpent, 150—200 μ in diameter; sporulæ oblong-elliptic, 2-guttulate, hyaline, 7—9 x 3—4 μ . On *Cornus*. N. America.

10. PHYLLOSTICTA PERSICÆ, Sacc. Mich. 1, p. 147.

Spots grey-brown, 4—5 millim. in diameter, breaking out in the center; perithecia brown, lenticular, epiphyllous, 112 μ in diameter; sporulæ subhyaline, with a slight tinge of green, ovate, or subcymbiform, 4—6 x 2—3 μ . On peach leaves. Ohio.

11. PHYLLOSTICTA CRATÆGI (Cke.), Sacc. Sylloge 3, p. 6.

Chilaria Cratægi, Cke. Grev., 12 p., 25. Rav., F. A., No. 516.

Perithecia light-brown, very delicate, hypophyllous, clustered, 130 μ ; sporulæ hyaline, oblong, or oval, 6—12 x 1 μ (3 x 1½ μ , Sacc). On leaves of *Crataegus*. Carolina.

12. PHYLLOSTICTA FRAXINI, E. & M. Am. Nat., 18. p. 189; N. A. F., No. 1163.

Spots light-brown, $\frac{1}{2}$ —1 cm. in diameter, border dark purple, narrow; perithecia epiphyllous, scattered, black, lenticular, 130—150 μ in diameter; sporulæ oblong, or oblong-elliptical, hyaline, 1—2-nucleate, 7—9 x $2\frac{1}{2}$ —3 μ . On leaves of *Fraxinus*. Pa.

13. PHYLLOSTICTA GARRYÆ, Cke. & Hark Grev. 9. p. 84.

“Epiphyllous, spots elliptical, light grey, border purple; perithecia black, shining, slightly prominent; sporulæ narrow, elliptic, hyaline, continuous, 10—12 x 2— $2\frac{1}{2}$ μ .” On *Garrya elliptica*. California.

14. PHYLLOSTICTA GLAUCA, Cke. *Septoria glauca*, Cke. Rav., F. A., No. 93.

Spots pallid, nearly round, 3—4 millim. in diameter, border dark brown, slightly raised; perithecia black, punctiform, epiphyllous, erumpent, 65—80 μ in diameter; sporulæ hyaline, oblong, 4 x 1 μ . On leaves of *Magnolia glauca*. S. Carolina.

15. PHYLLOSTICTA GORDONIÆ, E. & M. Journ. Mycol. 1, p. 100.

Spots dark brown, dry, occupying the ends and sides of the leaves; perithecia brown-black, subglobose, slightly erumpent, amphigenous, 120—140 μ in diameter; sporulæ hyaline, oblong, nucleate, 12 x 3 μ . On leaves of *Gordonia Lasianthus*. Florida

16. PHYLLOSTICTA GROSSULARIÆ, Sacc. Mich. 1, p. 136.

“Spots subcircular, sinuous, dry, grayish-white, margin dusky; perithecia punctiform, scattered, epiphyllous; sporulæ ovoid, or ellipsoid, hyaline, 5—6 x 3 μ .” On leaves of *Ribes Grossularia*. N. America.

17. PHYLLOSTICTA HAMAMELIDIS, Cke. Rav., F. A., No. 511; Ellis, N. A. F., No. 1154.

Spots dark brown upon the upper surface, light brown on the under, definite, somewhat irregular in outline, 3—5 millim. in diameter; perithecia brown, hypophyllous, clustered, erumpent, 120—130 μ ; sporulæ hyaline oval, or cylindric-oval, 2—3 x $1\frac{1}{2}$ μ . On leaves of *Hamamelis Virginica*. S. Carolina.

18. PHYLLOSTICTA HETEROMELES, Cke. & Hark. Ellis, N. A. F., No. 751; Grev., 9, p. 84.

Epiphyllous; spots pallid, orbicular, or confluent, occupying most of the edge of the leaves, border black, raised; perithecia black, convex, mostly epiphyllous, erumpent, thickly aggregated, 130—200 μ ; sporulæ hyaline, elliptic, continuous, 8 x 2 μ . On leaves of *Heteromeles*. California.

19. PHYLLOSTICTA LABRUSCÆ, Thiem. Ellis, N. A. F., No. 626.

Spots yellowish brown, 5 millim., suborbicular, border dark brown; perithecia black, subglobose, erumpent, circinate near the border, or clustered, epiphyllous, 112—120 μ in diameter; sporulæ subhyaline, oblong, ends round, 8—11 x 6—7 μ . On leaves of *Vitis Labruscæ*. N. Jersey.

20. PHYLLOSTICTA LEUCOTHÆS, E. & M. Ellis, N. A. F., No. 1369.

Spots rusty brown, large, involving the apices or often the entire upper half of the leaves, distinctly limited; perithecia black, globose, few, scattered, epiphyllous, deeply immersed, or but slightly prominent, 150—200 μ in diameter; sporulæ hyaline, ovate, oblong, granular, or 2—3-nucleate, 15—21 x 6—7 μ . Differs from *P. terminalis* in color of spots and larger spores. On leaves of *Leucothoe acuminata*. Florida.

21. PHYLLOSTICTA LIRIODENDRICA, Cke. Sylloge 3, p. 30. *P. Liriodendri*, Cke. Grev. 12, p. 26.

Epiphyllous; spots orbicular, dusky, turning gray, border brown; perithecia few, punctiform, congregated in the center, black; sporulæ elliptical, hyaline, 6—8 x 2—3 μ . On leaves of *Liriodendron Tulipifera*. S. Carolina.

22. PHYLLOSTICTA LYCHII, E. & K. Ellis, N. A. F., 1157.

Spots brown, turning white, circular, 1—2 millim., border thickened; perithecia black, lenticular, amphigenous, scattered, 100—140 millim. in diameter; sporulæ white, hyaline, elliptical, ends subacute, 6—12 x 2—3 μ . On leaves of *Lycium vulgare*. Ohio.

23. PHYLLOSTICTA MAGNOLIÆ, Sacc. Mich. 1, p. 139.

Spots large, gray-brown, covering the ends and sides of the leaves; perithecia black, globose, erumpent, epiphyllous, 128—160 μ in diameter; sporulæ hyaline, oval, ends round, 6—2 x 3 μ ("4 x 1½—2 μ var. 8—12 x 3—4½ μ Sylloge 3, p. 25.") On leaves of *Magnolia grandiflora*. Florida.

24. PHYLLOSTICTA MICROPUNCTA, Cke. Texas Fungi, No. 47. Sylloge 3, p. 18.

Spots subcircular; perithecia black, lenticular, barely erumpent, scattered, epiphyllous, 64—80 μ in diameter; sporulæ hyaline, ovate, 3 x 1½ μ . On leaves of *Persea Caroliniensis*. Texas.

25. PHYLLOSTICTA MYRICÆ, Cke. Rav. F. A., No. 154. Ellis, N. A. F., No. 535.

"Spots suborbicular, red-brown; perithecia very small, covered, in little nests; sporulæ narrow, oval, hyaline, 7 μ long. Specimen No. 535, N. A. F., differs somewhat from the above published description, and is of doubtful identity. It has large brown irregular spots covering the ends and sides of the leaves; perithecia black, subglobose, immersed, epiphyllous, 160 μ in diameter; sporulæ oval, hyaline, 9—18 x 3—6 μ . On leaves of *Myrica cerifera*. S. Carolina and Florida.

26. PHYLLOSTICTA NERII, West. Sylloge, 1, p. 26.

Spots oval, or suborbicular, light gray to white, 10—18 millim., border brown, elevated; perithecia amphigenous, at last erumpent, scattered, black, 200—250 μ ; sporulæ hyaline, oval, 1—2-nucleate, 15 x 4—6 μ ; ("15—18 x 5—6 μ , cloudy, or 1-guttulate." Sylloge.) On leaves of *Nerium Oleander*. Florida.

27. PHYLLOSTICTA NYSSÆ, Cke. Grev., 12, p. 26; Rav. F. A., No. 798.

Spots gray, large irregular, border purple; perithecia black, erumpent, punctiform, amphigenous, 65—95 μ ; sporulæ hyaline, subelliptic, $3\frac{1}{2} \times 1\frac{1}{2} \mu$. On leaves of *Nyssa capitata*. Georgia.

28. PHYLLOSTICTA OLEÆ, E. & M.

Spots gray, large, occupying the apices and sides of the leaves, border brown, elevated, perithecia black, subglobose, prominent, mostly epiphyllous, about 140 μ in diameter; sporulæ hyaline, oblong oval, 18—24 \times 3—4 μ . On leaves of *Olea Americana*. Florida.

29. PHYLLOSTICTA PERSEÆ, E. & M. Journ. Mycol., 1, p. 100.

Spots brownish-gray, large, covering the ends and sides of the leaves; perithecia brown-black, lenticular, erumpent, epiphyllous, 150—300 μ ; sporulæ hyaline, oblong, nucleate, 3—8 \times 1—3 μ . On leaves of *Persea Carolinensis*. Florida.

Mr. Ellis now thinks this is identical with *P. micropuncta*, Cke., and will have to be dropped. I have retained it for the present, however, as, from the specimens at my command, I have not been able to satisfy myself that it is so.

30. PHYLLOSTICTA PHOMIFORMIS, Sacc. Mich. 1, p. 573. Ellis, N. A. F., No. 1160.

Spots pallid, 3—5 millim., border brown, slightly elevated; perithecia loosely clustered, globose-lenticular, erumpent, amphigenous, black, 130—150 μ ; sporulæ oblong, ends acutish, granular, hyaline, 20—22 \times 8—10 μ , basidia short, attenuated upwards. On leaves of *Quercus alba*. Pa.

31. PHYLLOSTICTA PLATANI, Sacc. et Speg. Mich. 1, p. 153.

Spots large brown, turning gray; perithecia dark brown, lenticular, erumpent, mostly hypophyllous, 90 μ in diameter; sporulæ hyaline, oblong, 4 \times 1 μ .

“Spots obsolete; perithecia scattered, punctiform, lenticular, yellow; sporulæ ovoid-oblong, 5—6 \times 1—1 $\frac{1}{2}$ μ , minutely 2-guttulate, cloudy, hyaline” (Michelia). On leaves of *Platanus*. Kansas.

32. PHYLLOSTICTA PYRORUM, Cke. Grev. 12, p. 26. Rav., F. A., No. 512.

Spots white, large, often occupying the half or whole of a leaf, margin purple; perithecia black, scattered, convex, epiphyllous; sporulæ linear, straight, or curved, hyaline, 10 \times 2 μ . On pear leaves. S. Carolina.

33. PHYLLOSTICTA PYRINA, Sacc. Mich. 1, p. 134. Ellis, N. A. F., No. 1370.

Spots gray-brown, occupying the apices and sides of the leaves; perithecia black, flattened, erumpent, epiphyllous, 130—155 μ ; sporulæ hyaline, slightly smoky, ovoid, ends obtuse, 4 $\frac{1}{2}$ —6 \times 3 μ . “Spots pallid, dry, variable; perithecia mostly epiphyllous, punctiform, lenticular, erump-

pent, 100—130 μ in diameter; structure loosely cellular, ferruginous; sporulæ hyaline, ovoid, or ellipsoid, 4—1 x 2—2½ μ ." (*Michelia*.) On *Pyrus*. N. J.

34. *PHYLLOSTICTA QUERCUS RUBRÆ*, W. R. Gerard. Bull. of Torrey Club, 1875-78.

"Spots few, subcircular, or irregular, white, border red; perithecia epiphyllous, numerous, minute, globose, black, collected in the center of the spots; sporulæ very small, ovoid." On leaves of *Quercus rubra*. New York.

35. *PHYLLOSTICTA SASSAFRAS*, Cke. Grev. 12, p. 26. Rav. F. A., No. 515.

Epiphyllous; spots orbicular, gray-brown, or dusky; perithecia numerous, at times circinate, scattered, black; "sporulæ hyaline, elliptic, lanceolate, 7 x 1½ μ ." On leaves of *Sassafras officinalis*. S. Carolina.

In the American Naturalist, 17, p. 1115, Ellis & Kellerman state that the sporulæ are "globose, brown, coarsely granular." This is probably an error. My specimen in F. A. is sterile.

36. *PHYLLOSTICTA SEROTINA*, Cke. Grev. 12, p. 26. Rav., F. A., No. 513.

Spots light brown, orbicular, border darker, narrow, obscure; perithecia dark brown, epiphyllous, scattered, punctiform, 150 μ in diameter; sporulæ hyaline, slightly smoky, elliptic-lanceolate, 6 x 3—4 μ ("12 x 3 μ "). On leaves of *Cerasus serotina*. S. Carolina, N. Jersey and Kansas.

37. *PHYLLOSTICTA SINUOSA*, E. & M. Am. Nat., 18, p., 1264. Ellis, N. A. F., No. 1367.

Spots orbicular, reddish-brown, turning nearly white, mostly 2—3 millim. in diameter; perithecia black, lenticular, epiphyllous, scattered, mostly near the margin of the spots, 150 μ in diameter; sporulæ hyaline, oblong, or clavate-oblong, 6—15 x 1—2 μ . On leaves of *Olea Americana*. Florida.

38. *PHYLLOSTICTA SPHÆROPSOIDEA*, E. & E. Ellis, N. A. F., No. 1159. Bull. Torrey Bot. Club, 10, p. 97.

Spots reddish-brown, 1—2 cm. in diameter. Sometimes confluent, border light yellow; perithecia brown, scattered, punctiform, epiphyllous, but visible beneath, 120 μ ; sporulæ globose, or ovoid, hyaline, granular, 1—2-nucleate, 12—15 x 8—10 μ ; basidia stout. On living leaves of *Aesculus hippocastanum*. Newfield, N. J.

39. *PHYLLOSTICTA TERMINALIS*, E. & M. Am. Nat., 18, p. 70. Ellis, N. A. F., No. 1167.

Spots large, brown, becoming nearly white, border purple, black, narrow; perithecia black, globose, slightly prominent beneath the cuticle, epiphyllous, 100—120 μ in diameter; sporulæ hyaline, ovoid, ends obtuse, 15 x 4½ μ . On leaves of *Ilex Dahoan*. Florida.

40. PHYLLOSTICTA TOXICODENDRI, Thum. Sylloge, 3, p. 17.

"Spots small, reddish-brown, irregular, or subcircular, border dark red; perithecia epiphyllous, scattered, or solitary, black, medium, lenticular; sporulæ ellipsoid, hyaline, guttulate. $1\frac{1}{2} \times 1 \mu$." On leaves of *Rhus Toxicodendron*. S. Carolina.

41. PHYLLOSTICTA TOXICA. E. & M. Elhs, N. A. F., No. 1162. Am. Nat., 1882, p. 1002.

Spots gray, round, small, border dark brown; perithecia black, epiphyllous, innate, 70μ in diameter; sporulæ subhyaline, oval, subglobose, granular, $6-7\frac{1}{2} \mu$. On fading leaves of *Rhus Toxicodendron*. Iowa.

42. PHYLLOSTICTA VESICATORIA, Thum. Sylloge, 3, p. 34.

"Spots large, dry, visicular, brown, border purple; perithecia epiphyllous, scattered, globose, semi-immersed, medium, black, ostiolate; sporulæ minute ellipsoid-cylindrical, ends round, straight hyaline. $2\frac{1}{2} \times 1\frac{1}{2} \mu$." On leaves of *Quercus cinerea*. S. Carolina.

43. PHYLLOSTICTA VITICOLA, Thum. Sylloge, 3, p. 20. *Septoria viticola*, Berk.

"Spots large, subcircular, gray-brown beneath, brownish-purple above, determinate; perithecia amphigenous, but often hypophyllous, few, minute, globose; sporulæ short, ellipsoid, 1-guttulate, $8-9 \times 4 \mu$, hyaline." On leaves of *Vitis vulpina*. S. Carolina.

44. PHYLLOSTICTA MENTZELIÆ, E. & K. Journ. Mycol., II, p. 4.

Spots pallid, orbicular, or oval, 5—8 millim.; perithecia amphigenous, dusky, innate-erumpent, subglobose, $100-130 \mu$ in diameter, scattered, several in a spot; sporulæ oblong-oval, subhyaline, slightly dusky, $7 \times 3 \mu$. On leaves of *Mentzelia nuda*. Western Kansas.

45. PHYLLOSTICTA VULGARIS, Desm. Sylloge, 3, p. 18.

"Spots subcircular, reddish-olive at first, then pallid, margin gray-brown; perithecia slightly prominent, very small, globose-depressed amber-colored at first, then dusky; sporulæ minute, cylindric-ovate, obtuse, 2-guttulate, hyaline, $10-14 \times 2\frac{1}{2}-3\frac{1}{2} \mu$." On fading leaves of *Lonicera*, etc.

B. Those found on herbaceous plants.

46. PHYLLOSTICTA AMARANTHI, E. & K. Journ. Mycol., 1, p. 4.

Spots reddish-brown, 2—4 millim. in diameter, border dark, slightly raised; perithecia brown, erumpent, epiphyllous, $120-150 \mu$ in diameter, 6—12 in a spot; sporulæ subhyaline, elliptical, 1—2-nucleate, $9-11 \times 3-5 \mu$. On leaves of *Amaranthus retroflexus*. Kansas.

47. PHYLLOSTICTA ASTRAGALI, Pk. Bot. Gazette, 1881, p. 275.

"Spots obsolete; perithecia numerous, often amphigenous, $180-230 \mu$ in diameter, partially covered by the fissured epidermis; sporulæ hyaline, oblong, or oblong-fusiform, $13-16 \times 3 \mu$." On leaves of *Astragalus*, living and dead. Canada.

48. *PHYLLOSTICTA APOCYNII*, Trelease, Prelim. List, par. Fungi, of Wis., p. 17. Am. Nat. 18 p., 1264. (P. Apocyni, E. & M.)

Spots brown, round, 1—2 millim. in diameter, border dark, narrow, slightly raised; perithecia dark brown, subglobose, erumpent, epiphyllous, mostly in the middle of the spots, 75 μ in diameter; sporulæ subhyaline, oval, contents granular, 7—9 x 6 μ . On leaves of *Apocynum cannabinum*. N. Jersey.

The publication of this species by Prof. Trelease appears to have priority, his paper above cited bearing date Nov., 1884, and that of E. & M., December, of the same year.

49. *PHYLLOSTICTA BATATICOLA*, E. & M. Ellis, N. A. F., No. 1155. Am. Nat., 1882, p. 1002.

Spots small, white, round, 1—2 millim., border purplish; perithecia subglobose, black, few, innate, epiphyllous, 70—100 μ ; sporulæ oblong-elliptical, hyaline, 5—6 x 2—3 μ . On leaves of *Batatas*. N. Jersey.

50. *PHYLLOSTICTA BATATAS*, Cke. Rav., F. A., No. 264. Grev., 7, p. 35. *Depazea Batatas*, Thum. Myc. Univ., No. 598.

Spots pallid, subregular, 2—4 millim.; perithecia black, epiphyllous, covered by the epidermis, 100—125 μ ; sporulæ hyaline, oval, 6—7½ x 4½ μ . On leaves of *Convolvulus*.

51. *PHYLLOSTICTA CHENOPODII*, West. Ellis, N. A. F., No. 1158.

Spots pallid, nearly round, 3—5 millim. in diameter; perithecia black, erumpent, scattered, epiphyllous, but visible on both sides of the leaves, 130—160 μ ; sporulæ white, hyaline, oval, ends obtuse, 10—15 x 3 μ . On leaves of *Chenopodium album*. P. Chenopodii, Sac. Mich. 1, p. 150, appears to be a different species, and has not been reported as found in N. A.

52. *PHYLLOSTICTA CORNUTI*, E. & K. Torrey Bull., 11, p. 115.

Spots indistinct, brown, nearly round, or limited by the veinlets, more or less confluent, 2—3 millim.; perithecia black, thickly scattered, slightly erumpent, amphigenous, 90—100 μ ; sporulæ slightly colored, oblong-cylindric, or oval, 5 x 4 μ ; "3 x 1 μ ," (E. & K.) On leaves of *Asclepias Cornuti*. Kansas.

53. *PHYLLOSTICTA CRUENTA*, Fr. Ellis, N. A. F., No. 752. Mich., 1, p. 142.

Spots pallid, suborbicular, or ovoid, 3—10 millim., sometimes confluent, border dark-brown; perithecia olive-black, erumpent, gregarious, epiphyllous, 200 μ in diameter; sporulæ hyaline, oval, or "ovate-oblong, curved," granular, 12 x 9 μ ; "14—16 x 5½—6½ μ ." On leaves of *Smilacina racemosa*. Pa.

54. *PHYLLOSTICTA DECIDUA*, E. & K. Ellis, N. A. F., No. 1165. Am. Nat., 17, p. 1165.

Spots thin, white, subangular, often confluent and irregular, soon breaking out, 1—2 millim., margin definite, scarcely raised; perithecia dark-brown, subglobose, epiphyllous, but visible on both surfaces of the leaves, sparse, 60—100 μ ; sporulæ subhyaline, oblong-elliptical, 3—7 x 1½—3 μ ; "mostly 3—4 x 1½ μ , the longest with 2—3 faint nuclei." On leaves of *Leonurus cardiaca*. Ohio.

(To be continued.)

AMANITINE AND ITS ANTIDOTE.

BY CHARLES MACILVAINE, OF PHILADELPHIA.

(Concluded from page 9.)

The caps range in color from the bright scarlet of the *Amanita muscarius*, or poison-fly agaric, to the lemon-yellow of the *A. mappa*, and pure satiny white of the *A. bemus* and *A. phalloid*. Their stems are free from the gills, and are surrounded near the top with a kid-like apron or ring. At the base of the stem is a *bulb which is covered with a sheath or volva*. From this sheath or volva the poisonous *Amanita* invariably springs. As the investing membrane, in the shape of warts, ring, or volva, is frequently evanescent, one or all may be absent in aged plants: but the volva or remains of it, is almost universally found, if the plant is carefully removed from the ground. They grow in woods, uncultivated ground, on the margin of pastures near woods in fence corners, and by their great resemblance when young to the common mushroom are frequently mistaken for it. The common mushroom never has a volva, and is seldom found in woods. It has pink and purple gills, and a much shorter stem than the *Amanita*.

To Mr. Julius A. Palmer, of Boston, is due the segregation of the *Amanita* group, and the pointing to it as the only one known to contain the subtle deadly alkaloid which is the subject of this article—Amanitine.

In an article from his pen, contributed to the *Moniteur Scientifique*, of Paris, 1879, he says: "Mushrooms are unfit for food by decay, or other cause producing simply a disagreement with the system, by containing some bitter, acrid, or slimy element, or by the presence of a wonderful and dangerous alkaloid which is absorbed in the intestinal canal. This alkaliloid, so far as is known, is found only in the *Amanita* family."

So long ago as 1868, Drs. Currie, Vigier, Smidberg, and Koppe, isolated this alkaloid, and it has formed a part of our pharmacopia since that time.

The toxic properties of the *Amanita* have long been known. The inhabitants of Northern Russia drink a decoction of, or eat the dried *Amanita muscarius* (poison-fly agaric) for the purposes of narcotism and intoxication, and the urine of those who have partaken of it is in demand for future orgies, which is similar to those produced by alcohol.

M. Sicard, author of the "*Histoire Naturelle des Champignons Comestibles et Vinineux*," Paris, 1883, experimented with Amanitine on dogs. He says: "Recently I have sought an appropriate antidote—an antidote of which the effects after absorption should be diametrically opposed in the system to those produced by the alkaloid of the mushroom—defined as an acrid and stupefying poison." After the absorption of the poison by a dog, M. Sicard, in following up his theory, injected subcutaneously two milligrammes of nitrate of pilocarpine, and a half hour afterwards a second injection with the same dose. After friction and the administra-

tion of five grammes of nitrate of potash dissolved in one hundred grammes of a solution of marshmallows, the dog recovered. "In strict truth," says M. Sicard, "I must say that the dog never recovered his normal condition; but the progress of the poison ceased, and he at least lived."

Dr. Gautier, in a work entitled "*Les Champignons.*" Paris, 1884, says: "The use of atropine has been advised, not only to combat narcotic symptoms, such as those produced by opium poisoning, but as an antidote for muscarine—not yet perfectly isolated from the *Amanita muscarius*." The experiments that we have made upon animals in order to study the antagonism of atropine, and reciprocally, against the toxic elements of the *Amanita bulbosus*, *Amanita muscarius*, etc., have furnished negative results only. Yet it would be irrational to conclude that it lacked in efficacy upon man; and in all cases of poisoning by toad-stools where nervous symptoms are manifested, it would be prudent to try the use of atropine in the dose of from $\frac{1}{2}$ to 0.002 of a milligramme.

The experience that we have reached in the search for an antidote against the action of the poisons of the *Amanita*, *Lactarius*, etc., by means of the subcutaneous injection of many substances, have given equally negative results. It is, however, important to continue these experiments, especially in the presence of the results obtained by Letellier. (The experiments of Letellier were confined to attempting the precipitation of the poison by the use of tannin.)

Experiments upon frogs were made with atropine, using it as the antidote for Amanitine, and *vice versa*, with pronounced success; but not until August, 1885, was atropine successfully brought face to face with Amanitine in the human system, as happened in the case of toad-stool poisoning in the Faris family, of Shenandoah, Pa., coming under the charge of Dr. S. E. Shadle, of that place, whose report will be found very valuable as indicating the symptoms of poisoning from eating of the *Amanita vernus*, and the treatment pursued by him.

Immediately upon noticing these cases of poisoning in the public prints, the writer addressed a letter of inquiry to Shenandoah, which was fully responded to by Dr. Shadle, and samples of the toadstools eaten by the Faris family—selected by Mr. Faris, one of the survivors of the poisoning—were forwarded for identification.

Of those samples, two were harmless agarics and the other a white agaric—*Amanita vernus*—one of the poisonous varieties of the *Amanita*. At the writer's request, Dr. Shadle wrote the following report in answer to numerous queries: * * * * * * *

The report of Dr. Shadle corroborates all former observations of the poisoning by Amanitine, in that the poison does not manifest itself until from eight to fifteen hours after ingestion and the peculiar dusky hue of the skin as one of its marked symptoms.

In relation to the latter, Mr. Palmer writes: "The absorption of the poison from the *Amanita* may take place not only by ingestion, but by contact with the skin, as through the hollow palm of the hand or arm; by the lungs, as I have proven by personal experiments made upon my-

self. In such a case the patient has all of the symptoms of having eaten of the mushrooms, *even to a peculiar leaden or ash-colored complexion.*"

The possession of specimens of the toadstools eaten, the identification of an *Amanita* among them or not, as the case may be, the length of time elapsing between the eating and manifestations of the poison, will inform the physician as to whether or not *Amanitine* is at work and whether it must be met by atropine, or the case treated for a less virulent poison by milder remedies.

NOTES ON FLORIDA FUNGI--No. 2.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

The numerous and richly-developed species of *Polypori* naturally attract the explorer's first attention in a Florida forest. In a hard-wood hammock, near Jacksonville, a large oak (*Quercus laurifolia*) may be seen in a half-decayed state. On the trunk, occupying a space twenty feet long and one foot wide, appears *Polyporus gilvus*, Fr. This is the largest specimen I have ever heard of. On the Pipe wood (*Leucothoe acuminata*) also on the *Magnolia* and *Ulmus*, the living bark is made brilliant by those peculiar rosette-like forms—*Hypochmus albocinctus*, Mont., and *H. rubrocinctus*, Ehrb.

The Lichenologists claim these species also, but they are very interesting, all the same. These are found in perfect fruit here during the winter months, when it is cool and there are frequent rains. The summers are long, dry and very hot, therefore not many fungous forms attain their full maturity. To see a whole forest of magnificent trees and shrubs, many of them strictly Southern plants, adorned with extraneous life of lower vegetable orders, lends variety and charm not to be found elsewhere, unless it be in a tropical jungle.

NEW LITERATURE.

- " REFUTATION DE L'OPINION DU DR. G. EUGEL TOUCHANT LES QUALITES COMESTIBLES DE L'AMANITA MUSCARIA, FR." Cap. F. Sarrazin. *Revue Mycologique*, 1er Janvier, 1886.
- " FUNGI GALlici EXSICCATI.—CENTURIE XXXVIe." C. Roumeguere. l. c.
- " CHAMPIGNONS NOUVEAUX OU RARES DE L'AUBE—FASC. II." Par le Major Briard. l. c.
- " CHAMPIGNONS DU BERN (2e LISTE)." Par MM. E. Doassans et N. Patonillard. l. c.

MYCOTHECA UNIVERSALIS.

A set, consisting of 23 cents. of this valuable collection is offered for sale by Baron F. de Thuemen, St. Michael, a' Etsch, Austria, at the low price of \$50.00.

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LEWIS DAVID VON SCHWEINITZ.

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MANHATTAN, KANSAS, MARCH, 1886.

No. 3.

THE PHYLLOSTICTAS OF NORTH AMERICA.

BY GEORGE MARTIN.

(Concluded from page 20.)

55. PHYLLOSTICTA DODECATHEI, Trelease. Journ. Mycol., 1, p. 14.

"Spots circular, brown, about 3 millim. in diameter; sporulæ hyaline, ovoid to oblong, sometimes nearly spherical, eguttulate, $2-5 \times 3\frac{1}{2}-7 \mu$, unicellular." On leaves of *Dodacatheon Meadia*.

56. PHYLLOSTICTA GAULTHERIÆ, E. & E. Journ. Mycol., 1, p. 153.

"Spots scattered, amphigenous, dark reddish-purple, 1—2 millim. in diameter, border still darker; perithecia amphigenous, sublenticular, black, coarsely cellular, slightly prominent, covered by the cuticle, $100-115 \mu$; sporulæ elliptical, hyaline, granular, $5-7 \times 4-5 \mu$. On living leaves of *Gaultheria procumbens*" Newfield, N. J.

57. PHYLLOSTICTA INNUMERA, Oke. & Hark. Grev., 9, p. 84.

"Hypophyllous; perithecia small, sometimes in orbicular spots, and at other times in large gregarious patches; sporulæ elliptic, hyaline, continuous, $4\frac{1}{2} \times 2 \mu$." On living leaves of (?). California.

58. PHYLLOSTICTA LAPPÆ, Sacc. Mich. 1, p. 151. N. A. F., No. 1166.

Spots subcircular, nearly white, 1—1½ millim., border brown, raised; perithecia brown, lenticular, erumpent, amphigenous, $70-100 \mu$; sporulæ hyaline, ovoid-oblong, $4\frac{1}{2}-6 \times 3 \mu$. On living leaves of *Lappa major*. Ohio.

59. PHYLLOSTICTA NESÆÆ, Pk. 34th Rep. N. Y. St. Mus., p. 44.

"Spots subcircular, pale red, scattered or confluent; perithecia hypophyllous, small, numerous; sporulæ oblong, nearly straight, hyaline, $7-10 \times 2\frac{1}{2} \mu$." On leaves of *Nesæa verticillata*. New York.

60. PHYLLOSTICTA ORONTHI, E. & M. Am. Nat., 16, p. 1002.

Spots large, yellow, border indefinite; perithecia brown, epiphyllous, 56μ in diameter; sporulæ hyaline, oval, $6 \times 2\frac{1}{2} \mu$. On leaves of *Orontium aquaticum*. New Jersey.

61. PHYLLOSTICTA PHASEOLINA, Sacc. Mich. 1, p. 49.

"Spots large, indeterminate, yellow; perithecia scattered, lenticular, erumpent, 70μ in diameter; sporulæ ovoid-oblong, mostly straight, hyaline, $6 \times 2\frac{1}{2} \mu$." On leaves of *Phaseolus diversifolius*. North America.

62. PHYLLOSTICTA PHYTOLACCÆ, Uke. Grev., 12. p. 25. Rav., F. A., No. 514.

“Epiphyllous; spots orbicular, gray brown; perithecia minute, semi-innate, light brown; sporulæ short, linear, obtuse, hyaline, straight, $8 \times 1\frac{1}{2} \mu$.” On leaves of *Phytolacca decandra*. South Carolina.

63. PHYLLOSTICTA PODOPHYLLI, Winter. Torrey Bull., 10, p. 49. Ellis, N. A. F., No. 1156. *Ascospora Podophylli*. Curt. Pk., N. Y., St. Rep. No. 23.

Spots large, irregular, often confluent, pale brown; perithecia black, globose, amphigenous, clustered, often near the veins, 100–120 μ in diameter; sporulæ subglobose, or ellipsoid, hyaline, granular, $8-9 \times 5-6 \mu$. On leaves of *Podophyllum peltatum*. Pennsylvania and Kentucky.

64. PHYLLOSTICTA SANGUINARIÆ, Winter. Journ. Mycol., 1, p. 123.

Spots scattered, round or irregular, gray, or white, 1–5 millim., border brownish-purple, distinct, elevated; perithecia epiphyllous, gregarious, globose, punctiform, erumpent, black, 100 μ in diameter; sporulæ numerous, elliptic, oblong, one end a little attenuated, hyaline, $5-7 \times 1\frac{1}{2}-2\frac{1}{2} \mu$. On leaves of *Sanguinaria Canadensis*. Missouri.

65. PHYLLOSTICTA SOLANI, E. & M. Am. Nat., 16, p. 1002.

Spots pale brown, border a little darker; perithecia black, amphigenous, upper portion deciduous, 90 μ in diameter; sporulæ subhyaline, oblong, $9 \times 2 \mu$. On leaves of *Solanum*. Kentucky.

66. PHYLLOSTICTA TUBEROSA, E. & M. Ellis, N. A. F., No. 1161.

Spots brown, subregular, soon breaking out, 2–3 millim., border dark brown; perithecia brown, lenticular, epiphyllous, 180 μ in diameter; sporulæ hyaline, ovate, nucleate, $12-18 \times 4-6 \mu$. On *Asclepias tuberosa*. New Jersey.

67. PHYLLOSTICTA VERBENICOLA, Martin, n. s.

Spots pallid, soon breaking out, 1–2 millim., border red-brown; perithecia dark brown, lenticular, amphigenous, few in a spot, 140 μ in diameter; sporulæ subhyaline, ellipsoid, ends obtuse, $9 \times 3 \mu$. On leaves of *Verbena hastata*. New Jersey.

The above differs materially from *P. verbenæ*, Sacc. Mich., 1, p. 530.

68. PHYLLOSTICTA VERBASICOLA, E. & K. Torrey Bull., 11, p. 115.

Spots large, often coalescing, border indefinite; perithecia light-brown, epiphyllous, 120–150 μ in diameter; sporulæ subhyaline, with a slight tint of brown, oblong-elliptic, $3\frac{1}{2}-5 \times 1\frac{1}{2}-2 \mu$. On leaves of *Verbascum Thapsus*. Kansas.

69. PHYLLOSTICTA VIOLÆ, Desm. Mich. 1, p. 143. Ellis, N. A. F., No. 1371.

Spots subcircular, pallid, 2–4 millim. in diameter, border brown, raised; perithecia brown, erumpent, lenticular, epiphyllous, 100–130 μ in diameter, but few in a spot; sporulæ hyaline, oblong, or oval-oblong, $6-7 \times 3 \mu$. On leaves of *Viola cucullata*.

70. PHYLLOSTICTA CORYLINA, E. & M. Am. Nat., 18, p. 1264.

This is *Gloeosporium Coryli* (Desm.), see Vol. I, p. 114, of this Journal.

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SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.*

BY J. B. ELLIS AND B. M. EVERHART.

FAMILY HYPOCREACEÆ, DE NOTARIS.

Simple, or compound. Perithecia subcarnose, or ceraceo-membranaceous, never carbonaceous, bright colored, opening by a subcentral ostium. Stroma, when present, soft, waxy-carrose, or occasionally cottony. Sacc. Syll., II, p. 447.

SUB-FAMILY I, HYPOCREOIDEÆ.

GEN. I, CLAVICEPS, TUL.

1. CLAVICEPS PURPUREA (Fr.), Tul. Ann. Sci. Nat., 1853, XX, Tab. 3.

The ascigerous form of this species, which grows from the *Sclerotium* (ergot), often found in heads of rye, and in various other species of the order *Gramineæ*, has not, so far as we are aware, been met with in this country, through its *Sclerotium*, or condensed mycelium (*Sclerotium clavus*, D. C.), is very common.

This species is characterized as follows: Heads sphæroid, tuberculose from the prominent perithecia, borne on short fluxuous stems; asci narrow, linear, 8-spored; sporidia filiform, continuous, attenuated toward each end, hyaline, 50—76 μ long. *Fusarium heterosporum*, Nees. and *Oidium abortifaciens*, B. and Br. are considered to be the conidia of this species.

2. CLAVICEPS MICROCEPHALA (Wallr.), which differs from *C. purpurea*, principally, in its smaller size (stem filiform, 10—16 millim. long, head globose, rufous, .05 millim.), grows from the ergot of *Phragmites communis*, which, however, also produces the first-mentioned species. Both these may be raised by cultivation of their sclerotia, which may be lightly covered with earth, kept properly moistened in a flower pot.

GEN. II, CORDYCEPS, FRIES.—Stroma vertical, entomogenous, or occasionally mycogenous, clavate. Sporidia filiform, hyaline, separating into joints.

A. ENTOMOGENÆ.

X. *Stroma simple, head rounded, or elliptical.*

3. CORDYCEPS ENTOMORRHIZA (Dicks.)

Carnose; head subglobose, fuscous; stipe slender, simple or double, subcompressed, 2 inches long, and over; asci cylindrical; sporidia filiform, hyaline, breaking up into cylindrical joints, or sections, 7—8 μ long.

Growing from larvæ of insects. Carolina (Ravenel).

* The arrangement here adopted is that of Cooke, in *Grevillea*, Vol. XII, p. 102.

4. *CORDYCEPS ARMENIACA*, B. & C. Journ. Linn., Soc., 1. p. 159. Tab. 1, fig. 1.

Apricot-colored, stipe flexuous, rather short, 8 millim. long; head subglobose, rather pale, roughened by the perithecia; asci elongated, subinflated at the apex; sporidia linear (?), immature.

On dung of birds, probably from the remains of insects eaten. Carolina (Ravenel).

XX. *Stroma furcate, or ramose.*

5. *CORDYCEPS PALUSTRIS*, Berk. & Br. Linn. Journ., 1. c., fig. 5.

Carnose-suberose, dark, dirty flesh-colored, stipe cylindrical, bifid, or trifid above, 25—50 millim. long, including the clavate subcylindrical head, which is roughened by the projecting ostiola; sporidia filiform, separating into small ($1\frac{1}{2}$ μ) globose joints. On dead larvæ in damp ground. Carolina (Ravenel).

XXX. *Stroma simple, head elongated.*

6. *CORDYCEPS STYLOPHORA*, Berk. & Br. Linn. Journ., 1. c., fig. 3.

Yellow; stipe slender, 12—18 millim. long, $\frac{1}{2}$ millim. thick; head much elongated, with the surface nearly smooth; perithecia immersed. On dead larvæ. Carolina (Ravenel).

The specimen in Ravenel's Fungi, Car., Exsicc., V, No. 49, has the slender stem a little over 2 cm. long, the ascigerous part occupying a medial position, cylindrical, and slightly enlarged, about 8 millim. long by 1 millim. thick, with a sterile, slender beak, about $\frac{1}{2}$ cm. long, being a prolongation of the stipe, but the specimen is apparently immature, being without asci or sporidia.

7. *CORDYCEPS CLAVULATA*, Schw. Syn., N. Am., 1155. On dead scale insects (Lecanium), on living branches of *Fraxinus* and *Prinus*, N. Y. (Peck). On branches of *Clethra*, Newfield, N. J.

From specimens collected by Prof. Peck, and distributed in de Thuemen's Mycotheca Universalis, No. 1258, we have drawn the following description: Stroma simple, clavate, about $3 \times \frac{1}{4}$ millim., consisting of a light emereous stipe, surmounted by a black ovate, or elliptical head, about 1 millim. high and $\frac{1}{2}$ millim. thick, roughened by the rounded prominent perithecia, which are of coarse cellular structure, and only imperfectly perforated above; asci sessile, broadest in the middle, contracted above, and rounded at the apex, $80-95 \times 8-10 \mu$; sporidia filiform, multiseptate, $40-70 \times 1\frac{1}{2}-2 \mu$, joints $3-5 \mu$ long.

In Sacc. Sylloge, II, p. 568, the species represented by the above specimens is made a synonym of *C. pistillariæformis*, B. & Br., but if the two species are the same, the name of Schweinitz has priority, and it is quite certain that the specimens in M. U., 1258, are the genuine *C. clavulata* Schw.

8. *CORDYCEPS MILITARIS* (Linn.)

Growing from dead pupæ of moths buried just below the surface of the ground. Massachusetts (Farlow), Carolina (Ravenel), Pennsylvania (Everhart), New York (Peck), New Jersey (Ellis), California (Harkness). Wisconsin (Trelease) conidia.

Stromata solitary, or sometimes several, issuing usually from the head, but sometimes from the articulations of the pupa. orange-colored, 4—5 cm. high, including the elongated-clavate head, which is 1—1½ cm. long, and minutely tuberculose from the subconic, emergent, orange-red perithecia. Asci slender, 115—150 x 4—5 μ , containing eight slender filiform closely-jointed sporidia, nearly as long as the asci, and breaking up into minute ($\frac{1}{2}$ — $\frac{3}{4}$ μ), hyaline, subelliptical segments. The conidial stage (*Isaria farinosa*, Fr.), is often met with, and resembles a small white plume of about the same height as the ascigerous stroma, and more or less branched above.

9. *CORDYCEPS RAVENELII*, B. & C. Journ. Linn., Soc. I, p. 159. tab. 1, fig. 4. Growing from dead larvæ of the "June-beetle" (*Lachnosteria fusca*) and other larvæ (?), buried in the ground. Carolina (Ravenel), Iowa (Bessey), Pennsylvania (Everhart).

Stroma (stipe) elongated, flexuous, compressed and sulcate when dry, at first minutely tomentose, finally nearly glabrous, 5 inches or more high (see Riley, in American Entomologist, 1880), including the elongated-cylindrical head, which is roughened by the superficial, black, subhemispherical, large (175—200 μ) perithecia. Asci linear-cylindrical, 150—200 x 7—9 μ , slightly narrowed above and rounded at the apex, containing 8, filiform sporidia, nearly as long as the asci, about 2 μ thick, and breaking up into joints 3—5 μ long. The specimens in Rav., Fungi Car. Exsicc. IV. No. 28, are from 8—10 cm. high, the yellowish-brown stem about 2 millim. thick, enlarged above, in that part occupied by the perithecia, to about 3 μ thick; but the specimens are, no doubt, considerably smaller than when fresh.

Descriptions and good drawings of this and the two preceding species are given in Journ. N. Y. Microscop., Soc., Vol. I. p. 91 et seq., by Rev. J. L. Zabriskie.

10. *CORDYCEPS ACICULARIS*, Rav. Linn. Journ., l. c., fig. 2. (*C. Caroliniensis*, B. & Rav., in Rav. Fungi. Car. Exsicc. IV, No. 29).

Fuscous; stipe slender, elongated; head cylindrical, with a long acuminate sterile apex; perithecia superficial, free; asci very long, flexuous; sporidia linear, breaking up into truncate segments about 5 μ long. On larvæ buried a little distance below the surface of the ground. Carolina (Ravenel).

We have copied the above description from Saccardo's Sylloge II, p. 574.

The specimens in Rav. Exsicc. have a filiform flexuous stem, yellowish-brown below, cinereous and attenuated above, 8—10 cm. high, and (in our copy) entirely sterile.

11. *CORDYCEPS SUPERFICIALIS*, Pk., 28th Rep. N. Y. State Mus., p. 70. Under hemlock trees on buried larvæ. Northville, N. Y. August. (Peck.)

"Slender, about 1 inch high, smooth, brown, the sterile apex gradually tapering to a point; perithecia crowded, superficial, subglobose, blackish-brown, sometimes collapsed, with a small, papilliform ostium: asci cylindrical: spores long, slender, filiform. Related to and intermediate between *C. Ravenelii* and *C. acicularis*. The stem of the plant is about equal in length to the club, or perithecia-bearing part. The perithecia are more loosely placed at the extremities of the club, thereby giving it a subfusiform shape. The spores are more slender than those of *C. acicularis*, but the plant itself is less elongated and slender." We have seen no specimens, and copy the above from the report cited.

XXXX. *Perithecia scattered on the stroma, scarcely capitate.*

12. *CORDYCEPS SPHINGUM*, Tul. Sel. Carp., III. p. 12.

(Growing from dead moths, of the genus *Sphinx*. Massachusetts (Farlow, in "List of Fungi found in the vicinity of Boston." Bull. Bussey Inst.)

Stromata arising from a thin pale-ochraceous crust, overspreading the matrix, very slender and rather rigid, scattered, 50 millim. long; springing mostly from the abdominal rings; perithecia seated on the crust itself, or on the lower or medial parts of the slender stromata, subsuperficial, sparingly cæspitose, or collected into a tolerably dense spike (densius in spicam digestis), narrow, ovate, $\frac{1}{2}$ millim. long, glabrous, carnose, pale reddish; asci very long, cylindrical, 4 μ thick; sporidia very narrow filiform. The conidial stage is *Isaria Sphingum*, Schw.

(To be continued.)

SKETCH OF DE SCHWEINITZ.*

BY W. A. KELLERMAN.

Lewis David von Schweinitz was born at Bethlehem, Pa., Feb. 13th, 1780. His father is said to have belonged to an ancient and distinguished family of Silesia, Germany. He was superintendent of the "fiscal and secular concerns" of the Moravian Brethren of North America. Schweinitz was doubtless much influenced in determining his choice of vocation by his father, but still more by his maternal ancestors. His mother was Dorothea Elizabeth de Watteville, daughter of Baron (afterwards Bishop) John de Watteville and Benija, who was a daughter of Count Zinzendorf. Nicholas Lewis Count Zinzendorf (born in Dresden in 1700) was celebrated in his early youth for forming religious societies.

* This sketch is based on "A Memoir of the late Lewis David von Schweinitz, P. D., with a sketch of his scientific labors, read before the Academy of Natural Sciences of Philadelphia, May 12th, 1835, by R. Walter Johnson," to which the reader is referred for a more extended account. A MSS. copy of this was placed in my hands by the kindness of Mr. Eugene A. Rav. The latter also furnished a photograph of the lithographic likeness accompanying the memoir, from which our portrait was prepared.

He was afterwards associated with Watteville in founding the system of the "Unitas Fratrum." He established the village of Herrnhut; and from this little colony many missionaries were sent out to all parts of the world to instruct the heathen. At Germantown, and other places near, he held frequent religious discourses, in 1742, and in Philadelphia in a Latin speech renounced his title of Count, resuming his original family name, and was afterwards known among the Quakers as "Friend Lewis." Under his immediate agency, the colony at Bethlehem was founded. He died at Herrnhut in 1760, after having established his missions in all parts of the globe, and sent out a thousand individuals to proclaim his doctrines. Such a distinguished example, "the ancestor of his family and the father of his denomination," deeply impressed the imagination of Schweinitz, who very early conceived the laudable desire of entering upon a career of similar activity. This was the initiative step toward literary and scientific acquisitions. "Endowed with the powers of conception of no ordinary cast, he gave early indications of his bias for intellectual pursuits, and by his assiduity more than compensated for any deficiency in the means of improvement then within his reach. The clear and explicit manner in which his juvenile ideas were expressed encouraged his fond parents to indulge the hope that he would one day become an active instrument for advancing the cause to which themselves and their predecessors had been so assiduously devoted. Being the eldest son of his parents, and, at that period, of delicate constitution, it is reasonable to suppose that maternal influences had much to do in the development of his faculties. It was, moreover, on the side of his mother that he was related to Watteville and Zinzendorf; hence we may readily suppose that from this source he derived the partiality for addressing to his friends short speeches and little sermons which, it is said, occasionally amused the circle around his paternal fireside. We are aware that, in general, anticipations founded on an exhibition of precocious talents are apt to be signally disappointed; but when the display is that of an intellectual tendency, rather than a mere capacity for some one attainment, and when the spirit for mental labor is found capable of being directed into different channels at the instance of others and does not consist of a blind instinct, compelling the possessor to follow some narrow path of intellectual effort, the augury may, we apprehend, be received with less doubt and uncertainty. Such was the case with Schweinitz." He was placed, in 1787, in the institution of the Moravian community at Nazareth. Here he remained for eleven years, and during this time was, as a pupil, most industrious, observant and successful. He, in subsequent times, referred to this enjoyable period with much pleasure. It was here, also, that his amiable and social traits received a happy development. It was at Nazareth, though before he was a pupil in the institution, that he refers his first impulse to the study of botany. He visited the place in company with his grandfather, Bishop de Watteville, and noticed on the table in

one of the rooms of the school a Lichen, whose name and characters were commented upon; and from this time forward he was a most enthusiastic student of the vegetable kingdom. One of the teachers at Nazareth gave him instruction in botany, and while he was a student at the place, he prepared A Partial Flora of Nazareth, which is still among his unpublished manuscripts. He made such progress in his studies, and his deportment also was such as to secure his appointment as instructor to some of the classes while he was yet a student in the institution. In 1798, his father was called to Germany. His family accompanied him; and Schweinitz was placed in the theological institution at Niesky, in upper Lusatia. He was associated with young men of talent and energy, and his activities were here redoubled. J. B. d'Albertini was professor in the institution, — a man of great learning and decision of character. To him Schweinitz was drawn by strong sympathy, and their mutual esteem afterward developed into the closest intimacy. After completing his theological studies, he engaged in teaching in the Academy at Niesky. He was all this time not only a diligent student of fungi, but “scarcely any topic in the wide field of science escaped his notice, and especially did the constitution and management of the affairs of his social and religious fraternity call forth from his pen many able and spirited articles.” So many interesting and new genera and species of fungi had by this time been found by himself and Albertini that in 1805 a volume of about 400 pages was published by them conjointly, bearing the following title:

CONSPECTUS FUNGORUM IN LUSATIÆ SUPERIORIS AGRO NIESKIENSI
CRESCENTIUM E METHODO PERSONIANA. CUM TABULIS XII,
ÆNEIS PICTIS, SPECIES NOVA XCIII SISTENDIBUS. AUCTORIBUS
J. B. DE ALBERTINI, L. D. DE SCHWEINITZ, LEIPSÆ, 1805.

Schweinitz engaged in preaching, before he left Niesky, and in 1807 he was called to similar work in the Moravian settlement at Gnadenberg, in Silesia. The following year he was called to Gnadau, in Saxony, and remained there till 1812. At this time he was appointed general agent of his church in the United States. He married before leaving, and with his wife was compelled, on account of Napoleon's operations, to take a route through Denmark and Sweden, in order to embark for this country. This was advantageous to him, on account of extending his acquaintanceship with men of learning. At Kiel, in Holstein, he became known to many professors of the University; and that institution bestowed upon him the same year the honorary title of Doctor of Philosophy. It was a perilous voyage to make at that time, for the United States had declared war against Great Britain. Besides, they encountered terrible storms, and their vessel was dismasted. They finally reached the shore in safety; and he began his work according to appointment, at Salem, N. C. In the meantime, “he found time to prosecute the study of botany in a dominion, scientifically speaking, all his own.” The results of his work on the fungi were communicated to the world through the

publications of the Society of Naturalists at Leipsic, 1818. His friend, Dr. D. F. Schwægrichen attended to the publication, and the title it bore is as follows :

SYNOPSIS FUNGORUM CAROLINÆ SUPERIORIS SECUNDUM OBSERVATIONES LUDOVICI DAVIDIS DE SCHWEINITZ.

In this year, he was called to a meeting of his brethren at Herrnhut, and on his way there he visited England, France and Holland. At these places, he visited learned men, and established correspondences that were of great advantage to him subsequently. Some time after his return in 1821, he published a pamphlet containing Descriptions of seventy-eight Hepaticæ. In the same year, he sent to *Silliman's Journal* a Monograph of the genus *Viola*. At the end of this year, he was located in his native village of Bethlehem, Pa., both to continue his church duties and to take charge of the institution, for the education of females. He was, therefore, permitted once more, but in the "vigor of his scientific maturity," to visit the scenes of his first botanical exploits. His herbarium was, in the meantime rapidly increasing, his correspondence widening, and the value of his work was appreciated: this resulted in his election to several societies of natural history in America and Europe. In 1823, he worked up the botanical collections of Say in Long's expedition, though he did this with reluctance, regretting the absence of Nuttall, who had previously agreed to undertake the task. Near the close of this year, Schweinitz presented to the Lyceum of Natural History, at New York, a paper containing instructions for determining the American species of *Carex*. In 1824, he published in the *American Journal of Science* a short paper on the rarer plants of eastern Pennsylvania. In this year, also, his monograph of North American Carices appeared, but previous to its publication, he had placed it in the hands of Torrey, Schweinitz having been called for the third time to Europe. He said, on his return, that "The judicious and elaborate amendments he had proposed, and the mass of new and valuable matter he had added, entitle Dr. Torrey to a participation in the authorship of the work."

While he was absent (in 1824) in Europe, his paper, DESCRIPTIONS OF A NUMBER OF NEW AMERICAN SPECIES OF SPHERIA, was published by the Philadelphia Academy of Sciences. He continued his mycological work on his return, having given up the superintendency of the literary institution. He devoted his leisure time to his synopsis of North American Fungi (SYNOPSIS FUNGORUM IN AMERICA BOREALI MEDIA DIGENTUM), designed for a European journal, but published in the transactions of the Philosophical Society, of Philadelphia, 1831. His health, heretofore very good, now began to fail. The great amount of work and care, on account of his official station, and the composition of a dissertation on the affairs of his community, deprived him of his usual out-door exercise, depressed his cheerful spirit, and fatally undermined his health. A trip to Indiana on church duties seemed to revive him for a time. But his strength gradually declined, until the 8th of February, 1834, when he died calmly and unconsciously, at the age of 54 years.

NEW LITERATURE.

BY W. A. KELLERMAN.

"A NEW LARVAL ENTOMOPHTHORA," by J. C. Arthur, Botanical Gazette, January, 1886. The author found the clover-leaf weevil, *Phytonomus punctatus*, Fabr., a comparatively new insect in this country, infesting the clover in the region near Geneva, N. Y. The larvæ were dying in vast numbers, and, upon examination, the cause was discovered in the shape of a new species of Fungus, described as follows:

ENTOMOPHTHERA PHYTONOMI, Arthur. — Mycelium abundant, branched, non-septate, colorless, 9—12 μ in diameter, on the ventral surface of the insect, growing out in form of rhizoids to act as holdfasts; hymenium over the whole surface, except the head, 35—45 μ deep; conidiophores branched at the base, as thick as the mycelium; spores oblong, colorless, 24—28 μ long by 7—10 μ thick. Resting spores not seen. In the larvæ of *Phytonomus punctatus*, Fabr., Geneva, N. Y., May to June and October to November, 1885.

"UN GENRE DE TROP (PHLEBOPHORA, LEV.) DANS LA DIVISION DES HYMENOMYCETES." C. Roumeguère. Revue Mycologique, 1er Janvier, 1886.

"FUNGI ALGERIENSES, — A CLARO PROF. L. TRABUT LECTI." Auctoribus P. A. Saccardo et A. N. Berlese.

"UNE SEMAINE D'EXCURSIONS MYCOLOGIQUES A SENLIS (OISE)." Par le capitaine Fredric Sarrazin. l. c.

"DR. REHM: ASCOMYCETEN FASC. XVII." Hedwigia, November und December, 1885.

"AGARICUS CIRRHATUS. PERS., ENL. NEUER PHOSPHORESCIRENDER PILZ." Vorläufige Mittheilung von Dr. F. Ludwig. l. c.

"RABENHORSTII FUNGI EUROPÆI ET EXTRAEUROPÆI CURA." DR. G. WINTER, CENTURIA XXXIII ET XXXIV. l. c.

"SOPRA UNA SPECIE DI LOPHIOSTOMA MAL CONOSCIUTA." Nota di A. N. Berlese. Nuovo Giornale Botanico Italiano. 4 Gennaio, 1886.

"ALCUNE OSSERVAZIONI SOPRA UNA NUOVA MALATTIA DEL FRUMENTO;" del Dott. Fausto Morini. l. c.

"ENUMERAZIONE DEI FUNGHI DELLE PROVINCE DI MODENA E DI REGGIO, PER A. MORI. l. c.

"REPORT OF THE BOTANIST TO THE NEW YORK AGRICULTURAL EXPERIMENT STATION." By J. C. Arthur. Extr. from Fourth An. Rep. N. Y. Exp. Sta., for 1885. Distributed Jan. 30th, 1886.

This report of twenty-four pages contains the following articles: Pear Blight, *Micrococcus amylovorus*, B.; Spotting of Quince Fruit, *Morthiera Mespili*, Fekl., var. *Cydoniæ*, C. & E. (illustrated); Rotting of Tomatoes; Lettuce Rust, *Septoria Lactucæ*, Pass. (illustrated); Lettuce Mildew, *Peronospora gangliiformis*, De B. (illustrated); Rotting of Cherries and Plums, *Oidium fructigenum*, S. & K. (illustrated); Disease of Clover-leaf Weevil, *Entomophthora Phytonomi*, Arthur (illustrated); and Weeds and their Fungus Parasites.

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No. 4.

NEW SPECIES OF FUNGI FROM VARIOUS LOCALITIES.

BY J. B. ELLIS AND B. M. EVERHART.

THELEPHORA FLORIDANA, E. & E.—On bark of dead limbs. Florida. W. W. Calkins, No. 187. Resupinate; following the inequalities of the bark, and forming a thin, continuous umber-colored stratum, several inches in extent; margin thin, concolorous; component threads, about $5\ \mu$ in diameter, distantly septate, much branched, many of the branches issuing nearly at a right angle; spores subglobose, rough (echinulate), large, $10\ \mu$ in diameter. In its thin loose texture, approaching *Zygodesmus*.

PHYLLOSTICTA IVÆCOLA, E. & E.—On living leaves of *Iva frutescens*. Plaquemines Co., La., Jan., 1886, Rev. A. B. Langlois, 193. Spots amphigenous, small (1—2 millim.), whitening out, with a slightly raised, narrow, brown border. Perithecia epiphyllous, punctiform ($75\text{--}90\ \mu$), thin, black, sporules ovate- or oblong-elliptical, hyaline, $4\text{--}5 \times 1\frac{1}{2}\ \mu$.

CYPHELLA SUBCYANEA, E. & E.—On living leaves of *Sabal Palmetto*. Louisiana, Nov., 1885. Rev. A. B. Langlois, No. 57. Shallow cup-shaped, thin, substipitate, oblique, less than 1 millim. across, whitish and nearly smooth outside, hymenium bluish, or lead colored. Spores filiform, multinucleate, upper end thickened, curved into a semicircle, $40\text{--}60\ \mu$ long by $1\frac{1}{2}\ \mu$ thick, on short ($10\text{--}12 \times 1\frac{1}{2}\text{--}2\ \mu$) subcylindrical sporophores, which are a little thickened below.

Cyphella Bonanæ, Cke., has spores $10\text{--}12 \times 2\frac{1}{2}\ \mu$ and disk snow white, *C. muscicola*, B. & C., has an orange disk and *C. Palmerum*, B. & C., is white with a tomentose stipe.

DIPLODINA GALLÆ, E. & E.—On oak galls. Massachusetts, Miss C. H. Clarke. Small, black, scattered, covered by the epidermis which is soon ruptured, exposing the suberumpent perithecia which lie either singly or in little groups of 3—6. Spores obovate, 1-septate, subhyaline (with a yellowish tint), $10\text{--}12 \times 5\text{--}7\ \mu$, on stout pedicels. Differs from *Sphæropsis gallæ*. B. & C. (which is not a *Sphæropsis* but a *Phoma* with small ($5\text{--}6 \times 2\text{--}3\ \mu$) hyaline spores). in its much larger 1-septate spores.

SEPTORIA SYMPHORICARPI, E. & E.—On leaves of Symphoricarpus. Valley City, Dakota, Aug., 1884. Prof. A. B. Seymour. Spots subcircular, small (1—2 millim.), white with a brown border. Perithecia sublenticular, black, epiphyllous, few (1—5), prominent: sporules subcylindrical, a little narrower below, nearly straight, 20—40 (mostly 30—40) \times 2 μ and faintly 1—3 septate. The white spots are often included in larger irregularly-shaped rusty-brown spots and areas of the leaf, but the perithecia are, so far as observed, confined to the white spots. Besides the large brown spots, the leaves are thickly spotted with smaller (1—2 millim.) brown spots.

PESTALOTZIA SUFFOCATA, E. & E.—On living rose leaves kept for some days under a bell-glass. Prof. F. L. Scribner. Erumpent in black cirrhi. Conidia oblong-fusiform, 22—26 \times 5—6 μ , the three inner cells brown, the terminal ones hyaline, contracted below into a pedicel about as long as the conidia and crowned above with a crest of three hyaline spreading bristles 25—30 μ long.

MELANCONIUM TRIANGULARE, E. & E.—(N. A. F. 1568.) On dead limbs of *Carpinus Americana*. West Chester, Pennsylvania, June, 1882. Everhart & Haines. Acervuli subepidermal, orbicular, thin, stroma cortical, elevated in the center into a little conical pustule. Spores obtusely triangular, small (5—6 μ) brown under the microscope, black when seen in mass on the matrix, borne on the tips of slender basidia about 15 \times 1 μ , at length oozing out. In the early stage of growth, the stroma is distinctly multilocular, but this structure finally disappears. The shape of the spores indicates a relationship to *Asterosporium*. Found on the same limbs with *Valsa* (*Diaporthe*) *Ellisii*, Rehm., probably its pycnidial stage, thus indicating that this last-named species is a near ally of *Melanconis*, a supposition still further strengthened by the faintly appendiculate sporidia with a thin, gelatinous coat.

SPORIDESMIUM INQUINANS, E. & E.—Under side of a decaying oak plank. Plaquemines Co., La., Dec., 1885. Rev. A. B. Langlois, 139, in part. Forming a dense purplish-black, pulverulent layer, having almost the same appearance as *Torula herbarum*, Pers. Conidia subglobose, roughish, opaque, 12—25 μ in diameter, pedicellate, but the pedicels, which are about equal in length to the diameter of the conidia, are soon deciduous. The conidia, with their closely compacted, component cells, are much like those of *S. hysteroideum*, C. & E., and somewhat resemble blackberries. Nearly allied to *S. lepraria*, B. & Br., but more pulverulent, and conidia smaller.

SPORIDESMIUM HELICOIDES, E. & E. Under side of an old oak plank. Plaquemines Co., La., Dec., 1885. Rev. A. B. Langlois, No. 139. Compacted into a thin, black, crustaceous layer, forming patches 2—3 cm. long by about 1 cm. wide, and composed of cylindrical, dark-colored, multiseptate conidia, 40—60 μ long and 6—8 μ wide, some of which are nearly straight, but oftener the tips are involute, so as to resemble the conidia of *Helicomycetes*: occasionally, one or more cells are

divided by a longitudinal septum. Allied to *S. larvatum*, C. & E., but quite distinct from *S. helicosporem*, Sacc., in which the conidia are represented as arising from prostrate threads.

RHIZOCTONIA CARNEA, E. & E.—Among decaying chips, Potsdam, New York. Consisting of oblong, or subglobose, flesh-colored tuber-like bodies about $\frac{1}{4}$ of an inch thick and $\frac{1}{4}$ — $\frac{1}{2}$ an inch long, either grown together in irregular-shaped botryoidal masses, or lying singly, and connected by a white, fibrous mycelium.

CYLINDROCOLLA CYLINDROPHORA, E. & E.—On the under side of rot-pine logs. Newfield, New Jersey, Nov., 1885. When fresh, appearing like minute (1 millim.), milky, or nearly transparent drops of a soft, gelatinous texture. This gelatinous mass is filled with fasciculate, erect, slender, dichotomous threads, bearing, laterally, oblong-cylindrical, hyaline spores which are at first granular, but become 1-septate and about $20\text{--}24 \times 5\text{--}6 \mu$. The gelatinous masses are sometimes confluent for 3—4 millim. When dry, the fungus disappears entirely, but, on moistening the specimen for a few hours, appears again.

NECTRIA POLIOSA, E. & E.—Parasitic on *Diatrype platystoma*, Schw. Florida, Jan., 1886. W. W. Calkins, No. 138. Perithecia scattered, membranaceous, orange red, ovate-globose, one sixth millim. in diameter, sparsely clothed, except the papilliform ostiolum, with straight, spreading, hyaline, septate, glandular hairs, about equal in length to half the diameter of the perithecia. Asci sessile, oblong-cylindrical, about $75 \times 12 \mu$; sporidia biseriate, oblong, or subfusiform-oblong, and subinequilateral, hyaline, uniseptate and slightly constricted at the septum, containing several nuclei irregularly placed, $18\text{--}22 \times 7\text{--}8 \mu$, ends rounded, or subacute. The hairs which clothe the perithecia are at first about 7μ thick with the ends obtuse and a little swollen, but at length they become elongated and attenuated above.

This must be nearly allied to *N. tephrothele*, Berk., but in the description of that species, the perithecia are not described as hairy.

NECTRIA COCCICOLA, E. & E.—On scale lice on bark of living orange trees. Florida. Com. Prof. F. L. Scribner. Perithecia caespitose, membranaceous, about $\frac{1}{8}$ millim. in diameter and $\frac{1}{2}$ millim. high, flesh color, becoming dirty buff when mature, obovate, astomous, surface roughish, with a few scattered white rudimentary hairs, or at length bald. Asci clavate-cylindrical, $150\text{--}190 \times 20 \mu$, with abundant, rather stout paraphyses; sporidia eight in an ascus, clavate-cylindrical, multinucleate, hyaline, $110\text{--}140 \times 6\text{--}7 \mu$ at the upper end, attenuated below. The groups of perithecia are seated either on the shells of dead insects or on the bark itself, with a subiculum more or less distinct, composed of white decumbent, or prostrate, hairs of the same character as those found on the perithecia themselves. The species seems to be quite distinct from any of those described under the subgenus *Ophionectria* where this belongs.

DIATRYPE TEXENSIS, E. & E.—On bark of fallen limbs of (*Tilia*?). Houston, Texas, April, 1869. H. W. Ravenel, No. 130. Stroma subcarbonaceous, black, suborbicular, 2—4 millim. across, at length plane, or subconcave above, seated on the surface of the inner bark and bursting through the epidermis which closely surrounds it; perithecia coriaceous, with thick walls, globose, or subangular by pressure, 6—20 in each stroma, $\frac{1}{3}$ — $\frac{1}{2}$ millim. in diameter; ostiola subtuberculiform, or hemispheric, with a rather large, though indistinct opening; asci clavate-cylindrical, about $75 \times 12 \mu$, with abundant paraphyses: sporidia partly biseriate, yellowish-brown and 1-septate at first, becoming dark-brown and 3-septate, ovate or oblong-elliptical, $15\text{--}20 \times 6\text{--}7 \mu$, scarcely constricted at the septa, the terminal cells subhyaline. Has much the same general appearance as *D. cincta*, B. & Br. The bark and the surface of the wood beneath the stroma is more or less blackened. This would come under Saccardo's genus *Thyridaria*.

VALSA (CALOSPHERIA) HYLODES, E. & E. (Grk. *hylodes*, bushy.)—On smooth bark of a decaying log. Louisiana, Nov., 1885. Rev. A. B. Langlois, 111. Perithecia membranaceous, globose, $\frac{1}{2}$ — $\frac{2}{3}$ millim. in diameter, in clusters of 4—6, buried in the scarcely altered, fibrous substance of the inner bark, their stout, cylindrical, roughish, black ostiole, $\frac{1}{3}$ millim. long, pierced with a small aperture at the smooth, rounded apex, bursting through the epidermis (which is not split or torn) in little fascicles, with numerous light-brown, coarse, tow-like hairs as long or a little longer than the ostiole, and causing the surface of the bark to appear as if covered with clumps of miniature bushes. The ostiola are of a carbonaceous character, as they readily break square off, so as to appear truncate. The clusters of perithecia lie in parallel series, or lines, extending for three or more centimeters, and the epidermis, which remains closely attached, is scarcely elevated by the subjacent perithecia. Asci clavate, with a slender, thread-like base, spore-bearing part $18\text{--}22 \times 5 \mu$, with the upper part broader and obtuse. Sporidia cylindrical, hyaline, or with a faint yellow tint, rather strongly curved, about $5\text{--}1 \mu$, with a faint nucleus near each end.

LOPHIOSTOMA FLORIDANUM, E. & E.—Parasitic on old Diatrype stigma. Florida, Jan., 1886. W. W. Calkins, Nos. 123, 147. Perithecia gregarious, or scattered, hemispherical, black and rough, about $\frac{1}{4}$ millim. in diameter; ostiolum linear, extending quite across the apex of the perithecium, but scarcely prominent. Asci clavate, cylindrical, $80 \times 8 \mu$, with an elongated, slender base and surrounded with abundant filiform paraphyses. Sporidia biseriate, fusiform, slightly curved, olivaceous, 4-nucleate, uniseptate, constricted at the septum, just above which they are slightly swollen, $18\text{--}20 \times 4\text{--}4\frac{1}{2} \mu$. The matrix is overrun with a hyphomycetous growth, which also embraces the base of the perithecia, but we can not say whether this is accidental. This is quite distinct from *Dothidea episphaeria*, Pk., and *Sphaeria nigerrima*, Blox.

LEPTOSPHERIA CONSIMILIS. E. & E.—On dead willow limbs, near Huron, Dakota, autumn, 1885. Miss Nellie E. Crouch. Perithecia scattered, carbonaceo-coriaceous, $\frac{1}{2}$ millim. in diameter, at first covered and raising the fibers of the wood or bark into little pustules, ostiola papilliform, soon erumpent. Asci subcylindrical, 80—100 x 15—20 μ , with abundant paraphyses. Sporidia eight in an ascus, subbiseriate, cylindric-fusiform, 3-septate and subhyaline at first, becoming yellow, and finally dark-brown, about 7-septate, more or less constricted at the septa, 28—35 x 8—10 μ . Apparently allied to *Sphaeria Baggei*, Auersw., which is said to have greenish-yellow, 3—5-septate, sporidia. In the Dakota specimens, the mature sporidia are quite constantly 7-septate, exceptionally 8-septate. The perithecia occur both on decorticated limbs and on those still covered with the bark, but in the latter case, the bark is old and somewhat decayed.

LEPTOSPHERIA CASSLECOLA, E. & E.—On dead stems of Cassia, Houston, Texas, April, 1869. H. W. Ravenel, No. 128. Perithecia gregarious, minute, one eighth to one sixth millim. in diameter, covered by the blackened epidermis, which is raised into little pustules and at length pierced by the papilliform ostiola; asci, 70—75 x 8—10 μ ; sporidia biseriate, fusiform, slightly curved, 5-septate, yellow-brown, not constricted at the septa. Has the general aspect of a *Sphaerella*.

PLEOSPORA CASSIÆ, E. & E.—With the preceding species. Perithecia $\frac{1}{4}$ millim. in diameter, covered by the epidermis, which is raised in a pustuliform manner, but not blackened, and barely pierced by the papilliform ostiolum; asci subcylindrical, rather abruptly contracted at the base, 75—80 x 10—12 μ ; sporidia biseriate, yellow-brown, oblong-elliptical, 3-septate, and constricted at the middle septum, lightly curved, one or both the inner cells, with a longitudinal septum. The perithecia at length are slightly collapsed above.

SPHERIA (MONTAGNELLA) TUMEFACIENS, Ell. & Hark.—N. A. F., No. 1667. On dead limbs of *Artemisia Californica*. Mt. Diablo, Cal. Dr. H. W. Harkness. Perithecia hemispherical, one fifth to one third millim. in diameter, black, rough, crowded, united below into a crustose stroma, bursting out through longitudinal cracks in the bark and forming densely-compacted series, continuous, or interrupted, 3—5 cm. long on swollen portions of the limb or stem. Asci 100—120 x 10—12 μ , subcylindrical, with abundant paraphyses; sporidia mostly biseriate, cylindric-fusiform, slightly curved, 3-septate, yellowish, 25—30 x 6—7 μ . Bears a general resemblance to *Dothidea morbosa*, Schw., but the perithecia are arranged in series and the sporidia are quite different.

AMPHISPHERIA HYPOXYLON, E. & E.—Parasitic on some effused Hypoxylon. Plaquemines Co., La. Rev. A. B. Langlois, No. 138. Perithecia densely gregarious, superficial, globose ($\frac{1}{4}$ millim.), rough, black, subpruinose, membranaceo-carbonaceous; ostiolum slightly prominent, asci clavate-cylindrical, 55—65 x 10—12 μ , with abundant paraphyses; sporidia 1-seriate, oblique, ovate-elliptical, brown, uniseptate, 8—9 x 5 μ .

MELIOLA SANGUINEA, E. & E.—On leaves, stems and petioles of *Rubus trivialis*. Louisiana, Jan., 1886. A. B. Langlois, No. 74. Perithecia membranaceous, $\frac{1}{4}$ — $\frac{1}{2}$ millim. in diameter, subastomous, smooth, or at least without any bristle-like appendages, mostly epiphyllous, and either solitary or several in a small, rather compact group, on orbicular, subindeterminate patches of black, branching mycelium, with alternate, obovate, haustoria-like processes, much the same as those of *M. amphitricha*, Fr. Asci oblong-obovate, 2-spored; sporidia oblong-cylindrical, slightly curved, 3-septate, 38—44 x 12—15 μ , ends obtuse, hyaline, becoming brown. The leaves on which the fungus occurs are mostly stained a bright red color.

ASTERINA MINOR, E. & E.—On dead twigs. Houston, Texas, April, 1869. H. W. Ravenel, No. 183. Perithecia applanate, superficial, orbicular, $\frac{1}{4}$ millim. in diameter, black, mycelium obsolete; asci obovate, 25 · 30 x 12—15 μ ; sporidia crowded, oblong-obovate, 1-septate, yellowish, 10—13 x 3—3 $\frac{1}{2}$ μ (becoming brown?). Differs from *A. ramularis*, Ell., in its smaller perithecia and sporidia.

THE LEAF FUNGI OF FLORIDA.--NO. 3.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

The species found on trees, shrubs and herbaceous plants are numerous and interesting. I shall only refer to those collected by myself, all of which have been properly identified by specialists. The *Osmanthus Americana* (Devil wood), produces several star-like forms, known as *Asterina discoidea*, E. & M., *A. asterophora*, E. & M.—a new species just discovered. Also *Meliola amphitricha*, Fr. The former appear like little black dots to the naked eye, and the latter more web-like. Under the glass, their true structure appears. On *Ilex Dahoon*, *Asterina orbicularis*, B. & C., frequently covers the under side of the leaves. *Myrica cerifera* (Wax myrtle), is the home of the rare *Nectria erubescens*, Desm., of which I have found but few specimens. Here also occur *Meliola manca*, E. & M., and *Phyllosticta Myricæ*, Cke. *Persea Carolinensis* and var *palustris* (Red Bay) produce *Helminthosporium fumosum*, E. & M., on large black blotches. The varieties of *Quercus* abound in leaf fungi, such as *Ailographum* and *Meliola manca*. Various *Cercospora* may be found on leaves of *Smilax* and *Rubus*. I have not yet got down to weeds, grasses, etc., but we know that all have their own peculiar and distinct forms and their appropriate place in the great order of Fungi. Many others might be mentioned, but not having yet been detected by me, I omit them.

NOTES ON SOME PUBLISHED SPECIES OF FUNGI.

BY J. B. ELLIS.

CHÆTOMELLA (?) PERFORATA, E. & E. Journ. Mycol., I, p. 153.

Since the publication of the above, Prof. T. J. Burrill, of the University of Illinois, has sent us mature specimens (on *Cirsium discolor*), showing that the supposed *Chaetomella* is really an ascigerous fungus, which we refer to *Venturia*, since, although it has 3-septate sporidia, all the other characters place it in that genus.

It may be characterized as follows :

VENTURIA OCCIDENTALIS, E. & E. — Perithecia as previously described, membranaceous and of coarse cellular structure, subhemispherical rather than globose; asci subcylindrical, about $75-100 \times 7-10 \mu$ (with imperfect paraphyses ?); sporidia oblong-fusiform, 3-septate when mature, and constricted at the middle septum, or often at all the septa, nearly hyaline, $20-25 \times 4-5 \mu$. Most of the perithecia contain only stylospores. Var. MINOR on *Artemisia ludoviciana* has asci smaller ($50-60 \times 6-8 \mu$) and paraphyses more robust; sporidia about $15 \times 3 \mu$, oval, and the middle slightly colored.

UNCINULA POLYCHÆTA, B. & C. — In the description of this species, published in Grevillea, Vol. IV, p. 159, and in Saccardo's Sylloge, Vol. 1, the number of appendages is said to be "about 28," and the number of asci is not stated. In a recent examination of some South American specimens from Prof. Spegazzini, I found a perithecium (the only mature one examined) containing fifty 2-spored asci, and surrounded by over 200 appendages, $114-120 \times 6-7 \mu$, hyaline, continuous, with attenuated, involute tips. Perithecia $225-230 \mu$ in diameter.

The foregoing notes are also applicable to the specimens of *Uncinula polychæta*, B. & C., in Ravenel's Fungi Caroliniani. The species is remarkable for its numerous asci and appendages, but it seems unnecessary, on this account, to make it the type of a new genus. Possibly the statement that the number of appendages is "about 28" is a typographical error for *about 228*, which would be nearer the actual number.

CHROMOSPORIUM VIRIDE, Corda. — What appears to be this species was found by Dr. Geo. A. Rex, in the Adirondack mountains, August, 1885, forming a thin, dirty-green continuous layer on the surface of rotten wood, extending for several inches, and consisting, almost entirely, of transparent, greenish, granular, subglobose conidia, $12-16 \mu$ in diameter. The layer of conidia was traversed by a few obscure hyaline, mucedinous threads, but as the specimens were already past their prime, no very accurate idea of the origin of the conidia and their mode of attachment could be formed.

The specimen in Saccardo's Mycotheca Veneta, 1566, has the conidia smaller ($8-12 \mu$) and the color of the layer is darker, but this may be due to the application of poison. In Saccardo's specimen, the conidia are evidently borne at the tips of short, sparingly branched upright threads.

UROMYCES PULCHERRIMUS. B. & C.—Through the courtesy of Prof. F. L. Scribner, of the Agricultural Department, Washington, we have specimens of this species on leaves of *Abutilon holosericea*, collected by Dr. E. Palmer, in Mexico, agreeing accurately with specimens of this *Uromyces* on *Abutilon Texense*, from Dr. Farlow. In both these specimens, the spores are much more variable in size and shape than one would suppose from the description in Grevillea. They vary from nearly globose, 15—22 μ , to elliptical, or obovate, 20—26 x 14—16 μ , distinctly thickened and mostly rounded at the apex, but in the more elongated ones, obtusely pointed. In the Mexican specimens, also, some of the spores are uniseptate, with the septum often oblique, or even vertical. Septa were also observed, but more sparingly, in the specimens on *Abutilon Texense*.

NOTES ON PEZIZA.

Of all the families of Fungi, none, perhaps, is more prolific in interesting and beautiful forms than that division of the Discomycetes, including the *Pezizas*. These are membranaceous, or more generally fleshy fungi of a discoid, or cup-shaped form, and growing either from the earth itself, or, oftener, from decaying wood or dead herbaceous stems. Like other fungi, they require for their growth and development a certain amount of moisture and of heat, though some of the species which grow on decaying wood appear to endure and even to flourish at a very low temperature. The beautiful *Peziza coccinea*, which grows on decaying limbs or pieces of decaying wood, partly buried in the ground, opens its scarlet-tinted cups in early spring, while yet the snow is only partly melted from the ground; while some of the smaller species that inhabit old logs appear in good condition late in the fall, even after the ground in the open fields is frozen. A species found by Mr. S. J. Harkness in the mountains of Utah (*P. earina*,—Gr. ear, spring) appears in full vigor on the decaying leaves of grasses still moist from the melting of the winter's snow. A very interesting species, from its unusual place of growth, is described by Dr. Cooke, in the Bulletin of the Buffalo Soc. Nat. Sci., March, 1875. The species grows from the decaying petals of *Magnolia*. The *Magnolia glauca*, near the northern limit of its growth, blossoms early in June. Soon after the petals have fallen, little cream-colored blotches, or swellings, will be noticed on some of them. These swellings are of a circular, or subelliptical shape, and about $\frac{1}{2}$ of an inch across. After a few days, they become darker colored and quite hard. If the affected petals happen to fall on dry ground, this swelling and discoloration proceeds no further: but, as the *Magnolia* grows in swampy ground, many of the affected petals fall in the mud or water, and, when the leaves fall in the autumn, are pressed down and buried completely in the mud, where they lie through the winter. But when the spring returns again, and the *Magnolias* put forth their fragrant

blossoms, each little black swelling (sclerotium) in the buried petals, instinct with life, unfolds a hidden germ that sends up its tiny, thread-like stem through the overlaying mass of decaying leaves and vegetable debris, bending and turning itself here and there, to avoid obstructions, on its way to the sunlight and the summer air, which having reached at length, it rises straight above the surface for $\frac{3}{4}$ of an inch or thereabouts, when its apex expands into a liver-colored, or circular disk about $\frac{1}{8}$ of an inch across, and slightly convex, or nearly plane above. The upper surface of this disk is covered with a layer of closely-packed, erect, cylindrical sacks, like the nap on velvet. Each of these sacks (asci) contains eight oblong-elliptical, transparent bodies called "sporidia," which are supposed to be capable of reproducing the species — *supposed*, we say, for all fungus spores are so minute that, although their germination may be readily watched under the microscope, it is hardly possible to follow the succeeding changes through all the different stages of development to the reproduction of a perfect specimen of a given species. It would be deeply interesting to know the exact manner in which this curious little plant perpetuates itself—how it is that, year after year, the fallen petals should continue to produce this wonderful little organism. It is not irrational to suppose, since the sporidia are readily discharged from the little sacks that contain them,—so abundantly, in fact that, in many of the larger species, they may be seen rising into the air, like steam or vapor, when the mature specimen is jarred or shaken,—that these sporidia find a lodgement on the petals, either before or after they have fallen from the tree, and, germinating, produce the swellings from which the mature *Peziza* will at length appear.

Another similar species (*P. incondita*) is found growing in company with the one just spoken of. There is the same black sclerotoid base, only, for the most part, larger ($\frac{1}{8}$ — $\frac{1}{4}$ of an inch across), convex on one side and concave on the other, sending up from some point in its margin a rather stout brown stem, expanding, as before, at its apex into a round, flat disk, producing asci and sporidia. This species differs from the first principally in its larger size and in the fact that the black sclerotium from which it grows is found lying among moss or on the bare soil, and not attached to any decaying leaf or other substance, nor buried in the mud, so that the stem, which is from $\frac{3}{4}$ to 1 inch high, rises perfectly straight and erect, without any tortuous base, as in the first-mentioned species, which had to force its way through the overlying mud and leaves.

Still a third species (*P. nyssægena*), somewhat similar to the two already mentioned, has been found growing from the bony seeds of the sour gum (*Nyssa*). The seeds, or nutlets, much resemble, in size and appearance, small cherry stones, and it is from one of the pointed ends that the stem of the *Peziza* proceeds, from the same point where the germ of the seed itself would have issued. The seeds producing this *Peziza*, like the petals in the first-mentioned species, are buried for an

inch or more in the soft mud where they chanced to fall, and into which, from their own weight, they would naturally sink. Here, again, we find the stem of the little parasite with an oblique, or tortuous base, from having to force its way through the overlying mud filled with decaying twigs and leaves that oppose its passage; but, on reaching the surface, it shoots up erect and straight to about the same height as the two already mentioned. The terminal disk, however, is rather thicker and has a decided tinge of flesh color. This species also appears later in the season (September to October), which fact, together with its different habitat and more robust growth, will readily distinguish it. How this remarkable parasite establishes itself in the nutlets of the gum tree is even more difficult to comprehend than in the case of the first-mentioned species, for the growth is not superficial, the stem of the *Peziza* issuing from the kernel of the fruit, whose bony envelope is cracked to admit its passage.

If the parasite reached maturity in the early part of the season, while the gum tree was still in blossom, we might imagine its sporidia floating in the air, to find lodgment on the stigma of the flower, though, in the single locality where it has as yet been found, the lowest branches on the single tree, from which the nutlets evidently fell, are at least twenty feet above the ground. We can only suppose, then, that the sporidia fall on the mature fruit, either while it is yet hanging on the tree or after it has fallen to the ground and, germinating, produce a mycelium which penetrates to the kernel within.

Other allied species have been described. *P. Curreiana*, a European species, grows from a sclerotium developed in the culms of *Juncus effusus* and *J. conglomeratus*, and also in culms of *Scirpus lacustris*. This is described as a very beautiful species, with dark-colored, very smooth hemispherical cups, which at length become funnel-shaped, 8—12 millim. across, borne on round, solid, subflexuous stems, 15—20 millim. long. The affected culms crack open in the spring, at the place where the sclerotium is formed, and from the cleft issue several (2—12) specimens of the *Peziza*, all from the same sclerotium. It is noted that, the greater the number of specimens, the smaller their size, and this also is the case with *P. gracilipes*. Occasionally, a *Magnolia* petal will be found perfectly mottled with small sclerotia, each of which produces one or more small *Pezizas*.

Another species (*P. Durieana*) is charmingly described by Tulasne in "Selecta Fungorum Carpologia." This species was first found by Durieu, in 1856, near the banks of the Garonne, in France. It arises from a sclerotium in the culms of *Carex arenaria* and comes to maturity in the latter part of June. The sclerotium is formed in the culms of the sedge, during the summer, but in the fall, the culms split open from the pressure of the included sclerotium, which then falls out and lies on the ground through the winter, ready, when summer returns, to mature its fruit. In the locality where it was first found, this parasite was so

abundant that, in a large patch of the *Carex*, hardly a culm could be found unaffected. It has since been found in other species of *Carex*, but not yet in this country. Sclerotia are not peculiar to any single genus of fungi—some produce Agarics, others, as the common ergot in rye, produce species of sphæriaceous fungi pertaining to the genus *Cordyceps*, and at least some species of *Aspergillus* grow from sclerotia which are now considered as the *condensed mycelium* of the various species connected with them, and are analogous to the resting spores in *Peronospora* and some other microscopic fungi. J. B. E.

NEW LITERATURE.

BY W. A. KELLERMAN.

“MILDEWS OF INDIANA.” J. N. Rose, Botanical Gazette, March, 1886.

A list of eleven species—one of *Uncinla*, four of *Microsphæria*, one each of *Podosphæra*, *Phyllactinia* and *Sphærotheca* and three of *Erysiphe*—collected in the vicinity of Crawfordsville, Indiana. New host-plants are as follows: *Sambucus Canadensis* for *Microsphæra Grosulariæ*, Lev.; Persimmon and Quince for *Podosphæra oxacantha*, D. C.; *Hieracium*, *Lactuca* and *Erigeron* for *Sphærotheca Castagnei*, Lev.

“SOME EXOTIC FUNGI.” By M. C. Cooke. Grevillea, March, 1886.

Descriptions of three species from India, five from Australia, and two from North America. The latter as follows: *Leptothyrium Liriodendri*, Cke., on leaves of *Liriodendron* and *Phoma cerasina*, Cke., on dead leaves of *Prunus lauro-cerasus*, both from Aiken, S. C.

“NEW BRITISH FUNGI,” “SYNOPSIS PYRENOAMYCETUM,” “PRÆCURSORES AD MONOGRAPHIA POLYPORUM,” “BRITISH SPHÆROPSIDÆ.” By M. C. Cooke. l. c.

“BEITRÄGE ZUR FLORA DER ROST- UND BRAND-PILZE (UREDINEEN UND USTILAGINEEN) THUERIGENS.” Von G. Oertel. Deutsche botanische Monatsschrift, Dezember, 1885.

“A SKETCH OF THE BOTANICAL WORK OF THE REV. M. A. CURTIS, D. D.” By Thos. F. Wood. Journal of the Elisha Mitchell Scientific Society, 1884–85.

“WEITERER BEITRAG ZU NEUEN PILZFORMEN AUS SLAVONIEN.” Von Stephen Schulzer von Mueggenburg. Hedwigia, Januar und Februar, 1886. p. 9.

“NACHTRÄGE UND BERICHTIGUNGEN ZU SACCARDO'S SYLLOGE FUNGORUM, VOL. I. II.” Von. Dr. G. Winter (Fortsetzung). l. c. pp. 10—28.

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No. 5.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 31.)

B. MYCOGENÆ.

13. *CORDYCEPS OPHIOGLOSSOIDES* (Ehr.) Parasitic on *Elaphomyces granulatus* and *E. muricatus*. Massachusetts (Farlow), New Jersey (Ellis), Pennsylvania (Everhart).

Stromata solitary, rarely cæspitose, simple, or very rarely branched, flexuous, subcompressed, carnose, yellow within, 8—12 cm. high, 5—8 millim. thick; head oblong, obtuse, or attenuated above, often hollow, roughened by the slightly projecting, densely crowded perithecia, dark-rufous, about 2 cm. long and 6—8 millim. thick; stem olivaceous, becoming black, sending out, from its base, yellow fibrous rootlets, which embrace the matrix and penetrate the soil for 2 or 3 inches around; asci cylindrical, 250—300 x 7—9 μ , 8-spored; sporidia crowded, filiform, 150—180 x 7—9 μ , multiseptate, at length breaking up into subellipsoid, yellowish-hyaline joints, 3—4 x 2—3 μ ; paraphyses very slender.

14. *CORDYCEPS CAPITATA* (Holmsk.) Link. Hand-bk. III, p. 347. Pers. Myc. Eur., tab. 10, fig. 1—4. Parasitic on *Scleroderma*, Carolina (Ravenel), Fungi Car. Exsicc., V, No. 48.

Stromata cæspitose, or solitary, simple, 3—8 cm. high; club, or head, ovoid-sphæroid, roughened by the slightly prominent, ovoid, densely crowded perithecia, liver-color or reddish-yellow, about 1 cm. thick; stipe equal, glabrous, citron color, or yellow, at length fibrose-strigose and yellowish-black, 3—4 millim. thick; asci cylindrical, very long, 15 μ thick; sporidia filiform, very long, at length breaking up into fusoid-elongated, or subbacillary joints, greenish-yellow and 25—40 x 5—6 μ .

C. SPECIES IMPERFECTLY KNOWN.

15. *CORDYCEPS HERCULEA*, Schw. Syn., N. Am., 1153. On the ground, among fragments of decaying wood. Salem, N. C. (Schweinitz).

Head large (12 millim. thick), ovate-clavate, obtuse, decurrent on the attenuate-elongated stem, alutaceous (leather color), yellow within, stipe also yellow; perithecia rather small, concolorous. Height of the whole fungus, about $1\frac{1}{2}$ inches (36 millim.)

In Curtis' Catalogue, pp. 138 and 139, two other species are mentioned, but not described:

16. *CORDYCEPS GRYLLOTALPÆ*, M. A. C. On buried Sand moles.

17. *CORDYCEPS ISARIOIDES*, M. A. C. On dead moths.

GEN. III, *EPICHLOE*, FRIES.—Stroma effused, mostly amplexicaul; sporidia filiform.

18. *EPICHLOE TYPHINA* (Pers.)

Stroma pale, thin, surrounding the sheaths and included culms of living grasses (*Phleum pratense*, *Dactylis glomerata* and *Carex*, fide Peck), extending longitudinally for 2—5 cm., and bearing, in the early stage of growth, small ($4-5 \times 3 \mu$), ovoid, hyaline conidia (*Sphacelia typhina*, Sacc.), finally covered with a layer of semi-immersed, soft, carnose-membranaceous, yellow perithecia, with somewhat prominent ostiola. Asci cylindrical, $150-230 \times 7-9 \mu$, slightly narrowed above, with the apex truncate, and capped with a subhemispherical, hyaline crest; sporidia 8 in an ascus, filiform, yellowish, multinucleate (becoming multiseptate) and nearly as long as the asci.

The species is common in Europe, and appears also to be widely diffused in this country. It is reported from Carolina to Pennsylvania and Iowa, and from Northern New York and Canada.

GEN. IV, *HYPOCREA*, FRIES.—Perithecia immersed in a pulvinate, or effused, subsuperficial stroma. Sacc. Syll. II, p. 581.

A. *Stroma vertically elongated.*

19. *HYPOCREA PETERSII*, B. & C. Grev. IV, p. 13.

“Agariciformis; stipite rugoso; peritheciis periphericis; ascis linearibus; sporidiis globosis.

At first sight, this looks like an Agaric invested with some *Hypomyces*, but the fructification is exactly that of a *Hypocrea*. Stem irregular, dilated upwards, about an inch high; head orbicular, irregular, rufous; perithecia both on the under and upper sides; sporidia globose in linear asci.” Found in Alabama, by Hon. J. M. Peters.

20. *HYPOCREA ALUTACEA* (Pers.)

On bark of a decaying (maple?) limb, lying on the ground. Newfield, N. J. (Stroma?) about 2 cm. high, clavate, leather-color. Only two specimens were found, and those were immature, so that the fructi-

fication could not be made out, though the surface of the club was finely punctate from the ostiola of the immersed perithecia. Saccardo, in Sylloge, gives the perithecia as 200—225 μ , obtusely papillate, and at length subprominent; asci cylindrical, 56 x 4 μ ; sporidia didymous, upper cell globose (4 μ), lower cell subovate (4 x 3 μ), hyaline. According to Tulasne & Broome, the club-shaped body is not the true stroma, but either *Clavaria ligula* or *Spathularia flavida*, bearing the *Hypocrea* as a parasite.

B. *Stroma pulvinate, disciform or effused.*

Sporidia 2-celled, easily separating in the middle.

a. *Stroma pulvinate, or discoid.*

1. *Sporidia hyaline.*

21. HYPOCREA RUFA (Pers.)

Stromata gregarious, superficial, subhemispheric, elliptical, or irregular in shape, mostly $\frac{1}{2}$ —1 cm. in diam., convex when fresh, contracted and rugose when dry, nearly brick-colored. punctulate by the slightly projecting ostiola, whitish within; asci cylindrical, nearly sessile, 65—75 x 4—5 μ , with 8 one-seriate, didymous sporidia, composed of two subequal, hyaline, subglobose, or subcubical cells, each 3—4 μ in diam.

22. HYPOCREA LENTA (Tode). Fr. S. M. II, p. 349.

“Stromata gregarious, 2—3 lin., broad, thick, margin repand, disk nearly plain, partially free from the matrix; perithecia minute, globose, immersed, ostiola punctate, minute.” The only specimen of this species in our possession was sent from California by Dr. Harkness and is on wood of fir (Herb. Hark. 3496). In this specimen, the stromata are $\frac{1}{4}$ — $\frac{1}{2}$ cm. in diam., nearly round, central portion adnate, leaving a narrow, free margin closely applied to the surface of the wood. The pale, globose, carnose-membranaceous, peripheric perithecia (200—220 μ in diam.) lie in a single layer, their ostiola very prominent and distinctly roughening the surface of the dirty-black stroma. Asci cylindrical, 80—110 x 5—6 μ , without paraphyses, containing 8 two-celled sporidia, each cell subcubical, or nearly globose and 4—4 $\frac{1}{2}$ μ in diam., or slightly ovoid, 4—5 x 3—3 $\frac{1}{2}$ μ .

23. HYPOCREA SCHWEINITZII, Fr. Elench. II, p. 60. (*H. contorta*, Schw. Syn. N. Am., 1224. N. A. F., 156.)

Stroma as in the preceding species, except that the central adnate portion is smaller, and, in well-grown specimens, the margin is distinctly undulate and sublobate; perithecia immersed, globose, or subovate (150 μ), scarcely roughening the surface, which is nearly punctate from the minute, slightly prominent ostiola; Asci cylindrical, 60—65 x 3 $\frac{1}{2}$ μ , without paraphyses, containing 8 two-celled sporidia, composed of two globose, hyaline cells, 3—3 $\frac{1}{2}$ μ in diam., and readily separable. On bark and wood. Common.

(To be continued.)

GYMNOSPORIUM HARKNESSIODES, ELL. & HOL.

JOURN. MYCOL., NO. 1, P. 6, AND NO. 2, P. 31 (VOL. 1)

Prof. W. G. Farlow has examined this and considers it only the spores of *Sordaria*, or some related genus. He has recently submitted specimens to De Bary, who agrees with him in saying that the spots have no connection whatever with the leaf, but are the spores, in all probability, of a *Sordaria*, *Chætomium*, or some related ascomycetous fungus.

E. W. D. H.

A NEW IOWA AECIDIUM.

One of the most conspicuous of all æcidial forms was found last summer, growing in abundance on the lopseed (*Phryma leptostachya*), at Spirit Lake, Iowa. Specimens were submitted to Dr. Farlow, who found no record of an æcidium upon *Phryma*. In view of this fact, the following may be given as a description of this æcidium, being fully aware that it is only a form of some species, known or otherwise, and that a provisional name is a convenient handle until the true one is found:

AECIDIUM PHRYMÆ, nov. sp.—Hypophyllous; spots effused, conspicuous, orange-yellow, not thickened, 1—3 cm. broad; æcidia usually in rows along sides of leaf veins, sometimes in evident circles, prominent, borders not greatly recurved; spores 20—25 μ in diameter, globose, epispore thin, nearly smooth; spermogonia indistinct. On *Phryma leptostachya*, Spirit Lake, Iowa, July, 1885.

B. D. HALSTED.

Iowa Agricultural College, Ames.

UNCINULA POLYCHAETA, B. & C.

UNCINULA POLYCHETA, B. & C. Grev. IV, p. 159.

The description of this species in *Grevillea* is very brief, and is as follows:

“PERITHECIIS SPARSIS; APPENDICIBUS MULTIS. On leaves of *Celtis occidentalis*. Car. No. 5619.

Perithecia scattered: appendages about 28, $1\frac{1}{2}$ times longer than the diameter of the perithecia, hyaline.”

Prof. Spegazzini in his *Fungi Argentini*, Pug. 2, p. 17, describes, under the name of *Uncinula Lynchii*, an *Uncinula*, found on leaves of *Celtis Tala*, near Buenos Ayres, which, on page 44 of the same work, is said to be identical with *U. polychæta*, B. & C., and is taken as the type of a new genus, *Pleochaeta*, S. & S. Two forms are mentioned: in the first of which the perithecia are densely gregarious and partially im

mersed in the mycelium; and in the second, superficial and thickly scattered, globose, 180—200 μ in diameter, at first orange-yellow, then black, surrounded with a circle of simple hyaline, straight, rather rigid, acicular appendages, 140—150 x 5—10 μ , attenuated towards the apex, subobtusate, or uncinately-curved, and finally deciduous. Texture of the perithecia membranaceo-coriaceous, dark and opaque. Asci elliptical-ovate, 90—100 x 30—35 μ , obtusely rounded above, abruptly contracted below into a thick, short pedicel, 2-spored, without paraphyses; sporidia hyaline, elliptical, 30—32 x 18—20 μ , rounded at the ends, granulose.

The description here quoted does not give the number of the appendages nor of the asci. Having received from Spegazzini specimens of the fungus on leaves of *Celtis Tala*. I have carefully examined them, and compared them with the specimens of *Uncinula polychæta*, B. & C., in Rav. Fungi, Car. IV, No. 68, which is certainly the same thing. I find in both the specimens mentioned the number of appendages on several perithecia examined to be certainly 250, by actual count, and probably more, as in places they were matted together so that it was difficult to count them accurately. They are thickest in the middle, and attenuated towards each end, the lower half being distinctly roughened and the tips incurved with a single coil. The asci are about forty in number and, according to my measurement, about 75—80 x 25—30 μ , each containing two sporidia, 25—30 x 15—18 μ . The statement in Grevillea, copied into the Sylloge, that the number of appendages is about 28, is evidently a typographical mistake for 228. The length of the appendages is also less than the diameter of the perithecia. There is certainly no reason that I can see for making of this fungus a new genus separate from *Uncinula*.

J. B. E.

CRYPTOGAMIC BOTANY OF A FLORIDA LOG.--PAPER 4.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

In the depths of the hummock, where I had often wandered in quest of Nature's wonders, I came suddenly upon a fallen giant,—a decayed *Quercus*. Having learned by experience that the “unexpected happens,” and sometimes most happily, too, I determined to “size up” the botanical riches here before me. I was not disappointed, as the results show. Beginning with lichens, here were in beautiful fruit *Cladonia fimbriata*, *C. pulchella*, *Lecanora punicea*, *Cladonia rangiferina*, *Thelotrema glaucescens*, *T. Domingensis*. The fungi were rich and abundant. *Polyporus gilvus*, Fr., and also what has passed for *Polyporus scruposus*, Fr., and *P. ferruginosis*, Fr., but the two latter, having been carefully examined by Mr. Ellis, must be included in the synonymy of the first. *Polyporus licnoides*, Mont., fine but scarce. *P. arcularius*, Fr., growing in the rotten bark. *Hypochnus rubrocinctus*, Ehrb., *Hypoxyylon tinctor*, Berk., *Stereum complicatum*, Fr., and to close the list, a beautiful *Eutypa*, not

yet identified. By this time my buggy was loaded, and, though I by no means considered the log exhausted, I marked the locality, in my mind, and wended my way home, more than ever impressed with a sense of the little I know and how much there is to learn, even from a log. Here were fifteen species obtained with no great effort in a very short time. Two are also tropical, perhaps more. But one lesson is that nothing, however common, should be neglected. I omit *musci*—several species.

SKETCH OF CURTIS.

BY WM. R. DUDLEY, CORNELL UNIVERSITY.

It is certainly an interesting and important fact in the history of Cryptogamic Botany in America that its two most eminent followers, both northern men by birth, should have been called by their professional duties, as clergymen, to the great state of North Carolina, early in their careers. This state is probably unsurpassed in America in the variety of its plant forms. Its position is central, and the variation of soil and climate remarkable. From the broad, low savannahs to the subalpine summits of "The Black Dome," "The Roan," "The Grandfather," and their richly-forested slopes and valleys, would indeed have been the chosen field for this pioneer work, if choice, instead of accident, had guided these men there. The work of Schweinitz, from 1812 to 1818, and Curtis, from 1830 to 1867—the date of the publication, by the latter, of the CATALOGUE OF THE INDIGENOUS AND NATURALIZED PLANTS OF NORTH CAROLINA,—resulted in the careful determination, preservation and cataloguing of nearly 24,000 species of fungi alone. Indeed, it is estimated that nearly two thirds of these were new to science. It must be remembered that this was mainly accomplished during the first great period of our national existence, viz.: before the civil war, when the science of botany did not receive much general encouragement from the public or from the schools or colleges, especially in the South. This happy outcome of circumstances, as well as his high regard for the distinguished attainments of Rev. Dr. Curtis, evidently led Dr. Gray, in Silliman's *Journal*, in 1868, to urge "our American Mycologist" to prepare a MANUAL OF THE FUNGI OF THE U. S., saying that, from its central position, North Carolina must contain nearly all the species of fungi of the Atlantic States, and unless he did write such a work, a vast amount of valuable knowledge of the forms of this group would be lost to the world, eventually. Unfortunately, such a work was never written. Had it been, what an impulse would have been given to the study of fungi! However, it is clear that a great work in this field was done by the men of the past generation, and the material used by them is still available in herbariums, where it can be consulted by their successors. But there has been danger that the history of the labors of these indefatigable explorers and writers, among whom we reckon Dr. Curtis as

one of the most distinguished, would never be written. Happily, Dr. Thos. F. Wood, of Wilmington, N. C., an old friend of Dr. Curtis, has recently published, in the "JOURNAL OF THE ELISHA MITCHELL SCIENTIFIC SOCIETY," for the year 1884-1885, pp. 9-31, "A SKETCH OF THE BOTANICAL WORK OF THE REV. MOSES ASHLEY CURTIS, D. D.," which gives an admirable account of his career. Nearly all the facts of personal history in this brief account are drawn from the article of Dr. Woods', and the writer here begs leave to express his thanks to that gentleman for permission to use these facts and for other information kindly furnished. He has also had recourse to the brief account in Silliman's *Journal*, Vol. 105, p. 391 (1873).

Moses Ashley Curtis was born May 11th, 1808, in Stockbridge, Mass. His father was Rev. Jared Curtis, of that place, and his mother a daughter of Gen. Moses Ashley. He graduated at Williams College, in the class of 1827, when only nineteen, and three years later went to Wilmington, N. C., as tutor in the family of Gov. Dudley. It is quite evident that he had acquired a strong taste for out-door life and for botanizing, during his youth, among the Berkshire hills, for at once he eagerly began the study of plants about Wilmington, not only determining the species, but observing the habits of the peculiar plants of the region. Dr. Wood presents a charming picture of the young tutor at this period, as follows: "Especially on Saturdays, he made excursions among the sand-hills and savannahs near Wilmington. At that time, Wilmington was a village of about 4,000 inhabitants, and the field for botanizing existed where now are busy streets. Close up to the village reached the pine forests, abounding with a flora rich and novel to the enthusiastic young botanist, while the savannahs, with their strange and interesting *Sarracenia*, *Pyxidantha* and *Droseras*, and the thousands of gaudy heads of *Liatris* and the brilliant yellows of *Coreopsis* and *Solidago* charmed the eye and filled his portfolio. * * * He found absorbing pleasure in the quiet of the fields and forests; and no doubt he looked forward to the holiday with eager expectation, that he might exchange the constrained duties of the school room for the freedom of the woods and for pleasant intercourse with the old and new floral friends he was to meet. * * * He was habitually accurate in his studies, and the results were early relied upon by his correspondents. Coming into a new field of botanical study, it was quite natural that he should have directed his attention to the habits of the very local *Dioncea muscipula*. Saturday after Saturday, he would visit the savannahs, and, lying at length upon the ground, would watch its peculiarities."

The result of this loving study was the completion, in 1833, and the publication, in 1834, in the BOSTON JOURNAL OF NATURAL HISTORY, Vol. 1, of his first contribution to science, an "ENUMERATION OF PLANTS GROWING SPONTANEOUSLY AROUND WILMINGTON, N. C." Remarks were added on new or obscure species. His account of *Dioncea* was extended, and his observations and conclusions so accurate and carefully expressed that, at present, there is little in his account that, living,

he would wish to recall. He corrected several errors then prevailing in regard to it, and confirmed the opinion of Ellis that it consumed the insects captured. In the meantime, returning to Boston, he studied for the ministry, took orders in the Protestant Episcopal church, at Richmond, Va., in 1835, and with his wife went to Lincolnton, in Western North Carolina, to enter upon mission work in the upper and mountain districts. Here he remained some years, and while faithfully ministering to those in need in the lonely forests or valleys of that region, his journeys never failed to bring to him new plant-forms, or old and long-lost ones as he retraced, at times, the track of the elder Michaux among the higher mountain-valleys and peaks.

He became thoroughly familiar with this delightful forest region, and furnished Dr. Gray, on the occasion of his first visit to it, in 1841, with "a complete itinerarium."

The active intellectual cast of the man is shown in his reaching out into new fields, early in his botanical career; for he soon began to accumulate facts on the great and profound questions of geographical distribution of plants, and to interest himself in the lower cryptogams.

His professional work called him to Raleigh, to Washington, Beaufort Co., to Hillsborough, to Society Hill, S. C.,—where he remained nine years; back again to Hillsborough, N. C., in 1856, where he remained till his death, April 10th, 1872.

Schweinitz' death occurred in 1834, or the year Dr. Curtis published his "PLANTS ABOUT WILMINGTON." Unquestionably the great *resume* of the former's work in fungi, his "SYNOPSIS FUNGORUM" (1831), had early attracted the attention of the young clergyman, whose heart had become fixed on botany as an avocation, but, apparently, it was not until ten years after Schweinitz' death that he began seriously to take up the lines laid down by his predecessor. In 1846, he opened correspondence with Mr. Ravenel, of South Carolina, in 1848, with Rev. M. J. Berkely, of England, and, during the latter year, he published his first "CONTRIBUTION TO THE MYCOLOGY OF NORTH AMERICA," in the *American Journal of Science*, Vol. 56, p. 349 (1848). He says at this time that, since the death of the late Mr. Lea, of Ohio, "I do not know of any American botanist who is giving this obscure but interesting order any special attention except H. W. Ravenel, Esq., of South Carolina, and myself." To Dr. Curtis, therefore, all American collections of Fungi made after this date were referred, as a rule. Many of the species described by him were, however, referred to his lifelong friend, Dr. Berkely, for final judgment, and appeared under the joint authorship of "Berk. & Curtis." This work he pursued unremittingly, often at the expense of his health, which was never very robust. After a time, he overcame, through the persuasion of Mr. Berkeley, his prejudice against fungi as food, and during the latter part of his life ascertained by personal testing that 111 species of the fleshy fungi of North Carolina (indicated in his catalogue by italics) were eatable, estimating at least forty or fifty of the eatable species to occur in the mountain regions, but still uncollected by him.

The privations of the civil war, causing a scarcity of meats, turned his attention more strongly to this subject. A southern gentleman, whom the writer recently met, and who was a lad at Hillsborough during a part of the war period, not only referred to Dr. Curtis with the greatest degree of veneration and pride, but described his enthusiasm on the subject of food fungi during those trying years, when he taught his friends and neighbors how to recognize the safe and palatable ones, and succeeded in establishing their very general use. In his letter to the Rev. Mr. Berkeley on the "EDIBLE FUNGI OF NORTH CAROLINA," written after the war, he shows a vast amount of minute information about these plants and the enthusiasm not only of the scientific man but of the worldly mycophagist as well. It is indeed very entertaining reading; and in it he reiterates his former statement that "in some parts of the country, I could maintain a regiment of soldiers five months of the year upon mushrooms alone."

He also advances the interesting theory that as some excellent species occasionally produce, when growing from certain substrata, offensive and unwholesome specimens, the material nourishing a fungus had a great deal to do with its food-qualities, on account of the inability of the fungus to assimilate that material after the manner of higher plants.

In these days, when an interest in the subject of fungus-food is springing up among the cultivated classes of this country, it is of importance to find how very far the experiments of this isolated but gifted scholar were carried a full generation ago, under not simply the stimulus of curiosity or a cultivated taste, but the strong pressure of a people's possible necessity. He was indeed in this, as in many things, far in advance of his time. His interest went so far as to minutely describe, in popular language, about forty species of food-fungi, to illustrate which, colored drawings were made by his son, now Rev. C. J. Curtis. This work, entitled "EDIBLE FUNGI," has never been published. But at this late day, a portion (about one third) will see light in Wm. Wood & Co's. "REFERENCE HAND-BOOK OF MEDICINE," now publishing. Let us hope that the day is not far distant when a publisher, enterprising enough to bring out the whole, will be found.

Dr. Curtis never spoke or wrote unless he had something of importance to say. His papers, therefore, are apt to be brief, but they are all valuable. The last publication of importance was his "CATALOGUE," already referred to, in which he gives, all too briefly, the results of his life work in botany in the form of an almost bare list of the plants he knew, or knew to grow, within the borders of North Carolina. There are in this list:

Flowering Plants	- - - - -	1873 species
Higher Cryptogams	- - - - -	315 "
Lichens	- - - - -	217 "
Algæ	- - - - -	52 "
Fungi	- - - - -	2392 "
Total	- - - - -	4849 "

Some of the Phænogamia bore his name as author, while it is estimated that 500 new species of fungi were described either by himself or by "Berk. & Curtis." His account of the "WOODY PLANTS" of his state is full of useful information, and he was ever on the alert to give useful information and to do good to the people of his state; not that he might get a reputation, but simply for their sakes.

The portrait accompanying the sketch above referred to, from the plate in possession of Dr. T. F. Wood, shows a full face of character and refinement. Activity of intellect, keen, intense nervous force, and uncompromising honesty are everywhere expressed in it.

We append a list of his papers on mycology, printed in Silliman's *Journal* and the Philadelphia Academy of Sciences. The Bibliography of a few other papers will be given in the next JOURNAL:

1. CONTRIBUTIONS TO THE MYCOLOGY OF NORTH AMERICA. (*M. A. Curtis.*) Amer. Jour. of Sci., Vol. 56, p. 349 (also note on p. 444), 1848. It contains thirty species in all orders, ten of them new to science, the others not before reported in America. From N. C., S. C. and R. I. (Olney collector of the latter).
2. CONTRIBUTIONS TO THE MYCOLOGY, etc. (*Berkeley & Curtis.*) Amer. Jour. of Sci., Vol. 58, p. 401, 1849. It contains thirty species of *Agaracini*,—three new species (*Berk. & Curt.*) From Nor. Car. So. Car. and R. I.
3. CONTRIBUTIONS TO THE MYCOLOGY, etc. (*B. & C.*) Amer. Jour. of Sci., Vol. 59, p. 171, 1849. It contains forty species of *Agaracini* and *Polyporei*,—eleven of them new (*B. & C.*); two of them new (*Berk.*); chiefly from North Carolina.
4. CONTRIBUTIONS TO THE MYCOLOGY, etc. (*B. & C.*) Amer. Jour. of Sci., Vol. 60, p. 185, 1850. It contains thirty species of Basidiomycetes,—ten of them new (*B. & C.*), from North Carolina and South Carolina.
5. "DESCRIPTIONS OF NEW SPECIES OF FUNGI, coll. by U. S. Exploring Ex., under Ch. Wilkes, U. S. N." (*B. & C.*) Amer. Jour. of Sci., Vol. 61, p. 95, 1851. It contains eight new species of Basidiomycetes and one new *Hypoxylon*, all from Sandwich and Feegee Islands and from New Zealand.
6. "EXOTIC FUNGI FROM THE SCHWEINITZ HERB." (principally from Surinam, Dr. Hering, of Phila., Coll.; a few are from Ohio). (*Berkeley & Curtis.*) Journal of Phila. Acad. of Sciences (new series), Vol. II, pp. 277-294, Pl. 25, with small figures of fifteen new species, 1850-1854. In this list occur descriptions of about thirty new species (*B. & C.*); also about the same number of *Schweinitzian MS.* species are here published.
7. "A COMMENTARY ON THE 'SYNOPSIS FUNGORUM' IN AMERICA BOREALI MEDIA DECENTIUM, BY L. D. DE SCHWEINITZ, 1831." (*Berkeley & Curtis.*) Journal of Phila. Acad. of Sciences (new series), Vol. III, pp. 205-224, 1855-1858. In writing this, the authors say: "A

fourth of the material has gone under review. We have had access to the numerous authentic specimens in the herbarium of Sir Wm. Hooker," and "Prof. Torrey has kindly presented us the collection given him by Schweinitz." The authors separate and describe two species as new; and a few new species are published from Schweinitz' MS. descriptions. All commented on are before No. 728 of the *Synopsis Fungorum*, etc., that is, up to and including *Thelephora*.

NEW LITERATURE.

BY W. A. KELLERMAN.

"FUNGI WHICH CAUSE DECAY IN TIMBER." By P. H. Dudley. Journal of the New York Microscopical Society, February, 1886.

The fungus, *Lentinus lepideus*, Fr., was found to be very destructive to railway sleepers, bridge timbers and planks made of yellow, or Georgia pine (*Pinus palustris*, Mill). Its whitish, delicate mycelium secretes fluids possessing acid re-actions, readily softens the thin-walled tracheides, causing their decomposition. "Decomposition of the wood, the so-called 'Dry-rot,'—which, contrary to the general opinion, never takes place in the absence of moisture—as rapidly ensues as the development of the mycelium (which secretes enough moisture for its own nourishment), unless the moisture be dried by external agencies. In railway sleepers, as soon as the thin-walled tracheides are softened by the action of the fungus, larvæ, from one-sixteenth to one-eighth of an inch long, perforate and consume them, leaving the thick-walled, harder cells in the condition of a series of shells, rendering the sleeper useless in less time than would the action of the fungus alone."

"THE MYCOLOGIC FLORA OF THE MIAMI VALLEY." By A. P. Morgan. Polyporei concluded. The Journal of the Cincinnati Society of Natural History, Vol. IX, No. 1. April, 1886, pp. 1-8.

The following are described: *Trametes*, with six species; *Dædalea*, with four species; *Favolus*, with one species; *Merulius*, with six species; *Porothelium*, with one species; and *Solenia*, with two species.

"CHAMPIGNOUS PARASITES DES PHANEROGAMES EXOTIQUES," par M. N. Patouillard. Revue Mycologique, 1er Avril, 1886.

"FUNGI GALLICI EXSICCATI," Centurie, XXXVIIe. C. Roumeguere. l. c.

"SUR QUELQUES DEFOMATIONS DES PHANEROGAMES CAUSEES PAR LES CHAMPIGNOUS PARASITES; par M. E. Rostrup. l. c.

"BOMMERELLA, NOUVEAU GENRE DE PYRENOMYCETES." El. Marchel. l. c.

Bommerella, nov. gen. (*Etym.* a dom. E. Bommer peritissima mycologa Bruxellensi). Fungus conidiophorus *Oosporam* exhibens. Perithecia superficialia, sparsa, ostiolata, contextu parenchymato fuligineo, seltis vestita. Asci octospori, pedicellati, aparaphysati. Sporæ eximie triangulares, depressæ.

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No. 6.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 51.)

24. *HYPOCREA RIGENS*, Fr. l. c. (*H. lenta*, Schw. Syn. Car., No. 28, not *H. lenta* (Tode).)

This species is said to differ from the preceding in its smaller and more regularly-shaped stroma, with the perithecia confined mostly to the central portion of the disk and by its habitat on bare wood, and not on bark; the stroma is also said to be of a darker color, without any olive or greenish shade. We are inclined to think that these points of distinction are due to imperfect development and are not of specific value, and we have examined many specimens, as the species (as represented in N. A. F. and Rav. F. Am.) is very common, both around Newfield and West Chester. Both *H. Schweinitzii* and *H. rigens* are distinguished from *H. lenta* (Tode) by their smaller sporidia.

25. *HYPOCREA SCUTELLÆFORMIS*, B. & Rav. (Rav., Fungi Car., IV., No. 31.) On bark of *Acer rubrum*. Carolina. (Ravenel.)

Stromata scutellate, centrally attached, margin free and, in the larger specimens, undulate and sublobate, 1—2 millim. across, convex, nearly smooth, only slightly punctate from the scarcely prominent ostiola, color dull red; cells of the sporidia subglobose, 3—4 μ in diam. Our knowledge of this species is derived from the specimen cited, in which the asci had disappeared, but the globose cells of the sporidia were abundant.

In Grevillea XII, p. 78, it is stated that *H. scutellæformis*, B. & C. and *H. Ravenelii*, Berk., in Rav., Fungi Car., are two names for the same species, but in our copy of the collection cited, the sporidia are, as above described, entirely different from the brown, fusoid, 3-septate sporidia of *H. Ravenelii*, Berk.

26. HYPOCREA PATELLA, C. & P. 29th Rep. N. Y. State Mus., p. 57.

"Fleshy, patellate, discoid, 1—2 lines broad, pale ochraceous; asci cylindrical; spores globose, sixteen, hyaline, 3—4 μ in diam. Resembles, externally, some species of *Helotium*."

27. HYPOCREA MINIMA, Sacc. & Ell. Mich. II, p. 570.

Stromata scattered, superficial, pulvinate, discoid, olivaceous, becoming nearly black when dry, hardly 1 millim. in diam., minutely punctulate from the slightly prominent ostiolaria, texture finely cellular, dark olivaceous; asci cylindrical, without paraphyses, 75 x 3½—4 μ , sessile, containing 8 didymous, hyaline sporidia composed of two globose-cuboidal cells about 3½—4 μ and readily separating. On bark of dead *Magnolia glauca*. Newfield, N. J.

28. HYPOCREA OLIVACEA, C. & E. Grev. II, p. 92.

Stromata scattered, consisting, at first, of patches of thin white tomentum ½—1 cm. in diam., becoming carnose and subpulvinate and of an olive-yellow shade, at length dark olive, or nearly black, and punctate from the slightly prominent ostiolaria; asci cylindrical, 65—75 x 3½—4 μ , contracted below into a substipitate base, and containing 8 two-celled, hyaline sporidia, the cells nearly globose, about 3 μ in diam., and readily separating. On decaying pine wood. Newfield, N. J. What appears to be the same was found on decaying bark of *Sassafras* lying on the ground.

29. HYPOCREA STEREOBUM, Schw. Syn. N. Am., 1183. On *Stereum fasciatum*. Bethlehem, Pa. (Schw.) On *Polyporus Curtisii*. South Carolina. (Ravenel.)

"Undulate-confluent, applanate, margin sublobate, surface plicate, subpulvinate, flesh-color, becoming brown; when young, covered with a white tomentum and then more distinctly pulvinate; sometimes solitary, but generally confluent in elongated strips in the folds of the matrix; substance quite soft, but not gelatinous; surface granular from the prominent perithecia, which are distinctly ostiolaria and *not* immersed in the whitish subjacent stroma; seminal dust (sporidia) copious. Often confluent for an inch in length, the separate, cushion-like stromata 3—4 lin. broad; margin partially free."

We have seen no specimens, and copy the above description from Schw. Cooke, in Grev. XII, p. 78, says the cells of the (didymous) sporidia are subglobose and hyaline.

30. HYPOCREA RICHARDSONI, Berk. & Mont. On bark of dead poplar.

Discoid-tubercular, scattered, or gregarious, dull purplish-red, centrally attached, ½ cm. across, deeply wrinkled, margin sublobate and free, whitish within. In Grevillea IV, p. 14, Berkeley states that the asci are clavate and the sporidia elliptic, and that it was first gathered in one of the Arctic expeditions by Sir J. Richardson. All the specimens we have seen are entirely sterile, like those in N. A. F., 1321. *Tubercularia pezizoidea*, Schw., is said to be the same. Its range appears to be northward from Maine to Wisconsin and west to Colorado and Utah.

31. *HYPOCREA SOLENOSTOMA*, B. & Rav. Grev. IV, p. 14. On decaying *Pachyma cocos*, Schw. Carolina.

“Subglobose, pale rufous, rather irregular; ostiola cylindrical, elongated; sporidia globose, $4\ \mu$ in diam.”

32. *HYPOCREA LATI-ZONATA*, Pk. Parasitic on *Cyathus striatus*, Hoff.

Subiculum dirty white, forming a broad ($\frac{1}{2}$ — $\frac{3}{4}$ cm.) band around the outside of the cups of the *Cyathus*, thickly punctated with the dark-brown, slightly prominent ostiola. Asci cylindrical, 75 — $80 \times 3\frac{1}{2}$ — $4\ \mu$, containing eight didymous sporidia, the cells separable, subglobose, hyaline and 3 — $3\frac{1}{2}\ \mu$ in diam. A very curious species sent from Ohio, under the above name, by Prof. A. P. Morgan.

33. *HYPOCREA VIRIDIRUFA*, B. & Rav. Grev. IV, p. 14. On dead alders. South Carolina. Ravenel.

“Subglobose, congested, or confluent, greenish-rufous; ostiola impressed; sporidia oblong, with two nuclei.”

In Grevillea XI, p. 129, this is referred to *Hypoxylon*, but if the specimen of *H. rufo-viridis*, B. & Rav., in Rav., Car. fasc. V., No. 53, is the same as *H. viridi-rufo*, B. & Rav., in Grev., l. c., the stroma is not carbonaceous (as it should be in *Hypoxylon*), but carnose. The specimen referred to is, in our copy, without fruit, — apparently immature.

11. *Sporidia colored.*

34. *HYPOCREA GELATINOSA* (Tode). On rotten wood both of deciduous and coniferous trees.

Stromata gregarious, superficial, pulvinate, or subhemispheric, carnose, soft, punctate from the slightly prominent ostiola, $1\frac{1}{2}$ — 3 millim. in diam. at first with a thin, light-colored tomentum at the base, pale, becoming yellowish or at length greenish, whitish within, subrugose, and partially collapsing when dry; asci cylindrical, contracted into a short pedicel at the base, 80 — $90 \times 3\frac{1}{2}$ — $4\frac{1}{2}\ \mu$, 8-spored; sporidia composed of two unequal cells, the upper nearly spherical ($4\ \mu$ in diam.), the lower ellipsoid, or ovoid, $3\ \mu$, yellowish. Probably common throughout. *Var. viridis* (Tode) is reported by Prof. Peck on maple chips, New York state.

35. *HYPOCREA CHLOROSPORA*, B. & C. Grev. IV, p. 14. On decaying bark. Newfield. N. J., also reported from New York.

Stromata small, greenish, nearly round, sessile, convex (1 — $1\frac{1}{2}\ \mu$), roughened by the rather prominent ostiola. Asci narrow cylindrical, about $75 \times 4\ \mu$, with eight two-celled sporidia, each cell subcubical or nearly globose, of an olivaceous color and 3 — $3\frac{1}{2}\ \mu$ in diam.

36. *HYPOCREA CHROMOSPERMA*, C. & P. 29th Rep. N. Y. State Mus., p. 57. On decaying wood. Buffalo and Greenbush, N. Y.

“Fleshy, soft, convex, orbicular, 1—2 lines broad, flattened and patellate when dry, whitish or watery tan-color; ostiola slightly prominent; asci cylindrical; spores quadrate-globose, brownish when mature, 4 — $5\ \mu$.”

37. *HYPOCREA CUBISPORA*, Ell. & Hol. Jour. Mycol., I, p. 4. On a decaying log. Iowa.

Stroma tuberculiform-obconic, subplicate below, about 1 cm. broad by $\frac{3}{4}$ cm. high, lemon yellow within and without, surface minutely punctate with the black ostiola; perithecia peripheric, globose, about 250 μ in diam., contents black; asci cylindrical, containing eight cubical or oblong-truncate, dark olive or brownish-black, 2-nucleate, 4—7 x 3—4 μ sporidia, some of which are obscurely uniseptate.

B. *Stroma effused.*

I. *Sporidia hyaline.*

38. *HYPOCREA CITRINA* (Pers.)

Thin, effused, carnose, lemon color, punctate from the dark, rather prominent ostiola, forming a thin crust overspreading decaying wood and bark, or, sometimes, decaying leaves and mosses for several inches in extent; asci cylindrical, 90—110 x 5—6 μ , cells of the didymous sporidia unequal, subglobose, 4—6 μ in diam. This is one of the commonest species. *Var. fungicola*, Karst. Myc. Fenn., II, p. 204, is reported, by Prof. A. P. Morgan, from Ohio.

39. *HYPOCREA ARMENIACA*, B. & C. Grev. IV, p. 15.

“Forming a thin, apricot-colored stratum which, when barren, looks like *Corticium ochroleucum*, at length fertile; perithecia superficial, scattered, of a deeper tint.” Specimens found at Newfield, on pine wood and bark, agree with the description quoted, except that the perithecia can hardly be called superficial, and the subglobose cells of the didymous hyaline spores are rather less than 3 μ in diam., whereas, according to Cooke, in Grev. XII, p. 78, they are 4 μ in diam.

40. *HYPOCREA OCHROLEUCA*, B. & Rav. Grev. l. c., from the brief description, can not well be distinguished from the preceding species. The cells of the sporidia are said by Cooke, in Grev., l. c., to be 6 μ in diam.

41. *HYPOCREA LACTEA*, Fr. Summa, V. S., 383.

“Carnose, broadly effused, bare, milk white, ostiola punctiform; asci cylindrical, 56 x 3 μ , subequal cells of the didymous, hyaline sporidia, globose, 3 μ in diam.” Sacc. Syll. II, p. 529, the species is credited to North America. We have seen no specimens. The habitat is given as on rotten wood, on *Polyporus medulla-panis* and on the ground.

42. *HYPOCREA SULFUREA*, Schw. Syn., N. Am., 1221.

“Rather thin, subcarnose, at length horn-like in texture (when dried), the thin, partially free margin variously lobed, sulphur-color, white within; perithecia crowded, globose-depressed, immersed, dirty-yellow; ostiola concolorous, papillate, situated in little pit-like depressions of the otherwise smooth surface. On bark. Rare. Separable when fresh, subrotund, $1\frac{1}{2}$ inches across.” In Grev., l. c., the globose cells of the hyaline sporidia are said to be 5 μ in diam.

43. *HYPOCREA PALLIDA*, E. & E. n. s. Parasitic on decaying *Polyporus cæsius*. Newfield, N. J.

Perithecia pale horn-color, subglobose ($250\ \mu$), immersed in a rather scanty, loose, white, tomentose mycelium (stroma), which overspreads the surface of the pores and covers the sides of the perithecia themselves, leaving their apices and papilliform ostiola bare; asci cylindrical, $65-75 \times 4-4\frac{1}{2}\ \mu$, containing eight oblong-elliptical, 2-celled hyaline sporidia, the cells subcubical or nearly globose, $3\ \mu$ in diam. and readily separating. The upper part of the perithecia collapses when dry, and, in old or weather-beaten specimens, the tomentose stroma disappears, leaving the perithecia sessile on the mouths of the pores. We have seen no specimens of *H. polyporoidea*, B. & C., but our species will be distinct from that, in the absence of any crust-like stroma and in its smaller sporidia. It was first found in October, 1880, and again in October, 1886.

44. *HYPOCREA CORTICICOLA*, E. & E. Journ. Mycol., I, p. 140. On bark of dead limbs of *Magnolia glauca*. Newfield, N. J., August, 1885.

Stroma thin, milk-white with the margin slightly cottony, forming a continuous layer, extending along the limb for six inches or more, finally becoming dirty-white, and cracking into small areas, as in *Corticium polygonium*; perithecia globose, pale, $75-100\ \mu$ in diam., buried in the stroma and visible under the lens as horn-colored specks; asci clavate-cylindrical, $20-22 \times 3\frac{1}{2}\ \mu$, sessile, without paraphyses; sporidia biserial, eight in an ascus, each consisting of two globose, hyaline cells, easily separating and $1-1\frac{1}{2}\ \mu$ (mostly $1\ \mu$ or a little over). This is closely allied to *H. hypomycella*, Sacc., Mich. I, p. 302, Syll. II, p. 529, but differs in its asci and sporidia being only about half as large as in that species.

45. *HYPOCREA POLYPOROIDEA*, B. & C. Grev. IV, p. 15. On beech. Alabama, Peters, 6110.

"Peritheciis tomentosis, liberis, in crustam pallidam insidentibus. Fawn-colored; perithecia free, tomentose with a naked ostiolum, seated on a pale crust, here and there elevated, which is thin towards the margin. A very curious species." Cooke, in Grev. l. c., gives the hyaline, subglobose cells of the sporidia as $5\ \mu$ in diam.

C. *Stroma discoid.* Sporidia continuous, hyaline.

46. *HYPOCREA CONSIMILIS*, Ell. Grev. XII, p. 79. N. A. F., 158.

Stroma orbicular or elliptical, convex, 2—4 millim. across, brick-red, wrinkled, carnose; asci clavate-cylindrical, $60-70 \times 4\ \mu$; sporidia 1-seriate, hyaline, $10-12 \times 3\frac{1}{2}-4\ \mu$. On dead *Azalea viscosa*. Newfield, N. J.

D. *Stroma pulvinate or effused.* Sporidia fusoid, hyaline, 1-septate.

47. *HYPOCREA APICULATA*, C. & P. 29th Rep. N. Y. State Mus., p. 57.

"Fleshy, soft, growing in irregular patches, smooth, ochraceous, inclining to orange, the extreme margin barren; asci cylindrical; spores fusiform with an apiculus at each end, 1-septate, colorless, $27-37 \times 7\frac{1}{2}-10\ \mu$. On the ground and on rocks. Catskill mountains, New York."

48. *HYPOCREA PAPYRACEA*, Ell. & Hol. n. s. Under side of an old log. Decorah, Iowa (Holway).

Stroma membranaceous, thin, separable, 2—3 cm. across, white with a yellow, substerile margin; perithecia superficial, fawn-colored, small ($150\ \mu$), thickly scattered on the stroma; asci slender, about $75 \times 3\ \mu$, (spore-bearing part about $60\ \mu$), without paraphyses; sporidia fusoid, hyaline, 1-septate, $8-10 \times 2\frac{1}{2}-3\ \mu$, readily separating at the septum. The yellow margin may be only accidental. This differs from *H. corticioides*, B. & Br., in its larger sporidia and different color.

49. *HYPOCREA DIGITATA*, Ell. & Holway. Journ. Mycol. I, p. 42. On a dead limb. White mountains, N. H. Miss Minns.

Stroma carnose, yellowish, digitate, radiating from a central point and dividing into numerous (2 millim. in diam.) semicylindrical, finger-like lobes, closely oppressed to and surrounding the matrix and extending longitudinally for about 5 cm. The rounded ends and the sides of the lobes are sterile, the perithecia being found only on the upper or outer surface; perithecia immersed, their position being indicated only by the prominent but minute black ostiola; asci cylindrical, $80-90\ \mu$ long; sporidia 1-seriate, ends mostly overlapping, hyaline, 1-septate, oblong or narrow-elliptical, often subinequilateral, $20-26 \times 6-8\ \mu$. The stroma is like the fingers of a hand clasping the limb. The sporidia are those of a *Hypomyces*, to which, perhaps, this should be referred, though it is not parasitic on any other fungus, unless the finger-like lobes are an abortive growth of some hymenomycete, which is not impossible.

50. *HYPOCREA CITRINELLA*, Ell. Bull. Torr. Bot. Club, VI, p. 108.

Stromata scattered or subconfluent, minute (1—2 millim.), thin-pulvinate, bright lemon-color, atro-punctate from the minute ostiola; asci slender, $100-120 \times 5-6\ \mu$; sporidia fusoid, hyaline, 1-septate, 1-seriate, $12-14 \times 3-3\frac{1}{2}\ \mu$. On dead twigs and limbs of *Vaccinium corymbosum* not yet fallen and not much decayed. In the original description, the true character of the sporidia was overlooked, the specimens first found being rather old and the cells of the sporidia separated.

E. *Stroma pulvinate. Sporidia fusoid, 3-septate, brown or yellowish.*

51. *HYPOCREA RAVENELII*, B. Grev. IV, p. 14. Rav. Car. V, No. 51.

“Pulvinata, rugosa, rubra; ascis clavatis; sporidiis biseriatis, fusi-formibus, demum triseptatis, .0015—.0016 inch long. On *Ostrya Virginica*, *Acer rubrum*. Car. Inf., 1575.” This description, copied from Grevillea, applies well to the specimen in Rav. Car., except the color which, in Ravenel’s specimen, is cinereous or argillaceous. The young specimens, however, are a dull brick red, but never bright red. There is some confusion as regards this species and *H. scutellæformis*, B. & Rav. As already noted, the two are said by Cooke to be the same (Grev. XII., 78), but the specimens of the two species in Rav. Car. are quite distinct. *H. Ravenelii*, Berk., as represented in Rav. Car. V, 51, is as follows: Stroma erumpent, tuberculiform-convex. clay color, becoming darker.

roughened by the blackish, rather large and prominent ostiola, 1—2 millim. in diam; asci 90—110 x 12 μ ; sporidia fusiform, slightly curved, 3-septate, brown, 38—45 x 3—4½ μ . *Diatrype lateritia*, Ell., Bull. Torr. Bot. Club., IX, p. 19, and *Hypoxyton myriangioides*, B. & C.(?) N. A. F., 474, are the same as this. The same thing is also to be found in Roumeguere's *Fungi Gallici*, No. 1174, on bark of *Corylus*, collected at Lyons, France. The young stroma, as already noted, is of a pale brick color, and is sometimes nearly plane above and at length more or less rugose and pitted from the collapsing of the upper part of the perithecia. Whether the *Hypoxyton myriangioides*, B. & C., is really the same as this, we are still unable to say, but the description of that species in *Grevillea* renders such a supposition not improbable.

52. HYPOCREA CHLORINA, Cke. Grev. VII, p. 49. Rav. F. Am., 342.

Flattened, discoid, elliptical or elongated, 1—2 millim. in diam., clay colored (bright yellow within); perithecia immersed, brown, ostiola blackish, punctiform; asci clavate, spore-bearing part about 75 x 15 μ , surrounded with abundant filiform paraphyses; sporidia biserial, narrow-elliptical, endochrome three times divided, yellowish (becoming brown?), 20—25 x 8—9 μ . On bark of hickory. Darien, Ga. The stroma is of about the same color as the bark, flatter than in the preceding species, but of about the same color.

F. *Stroma pulvinate or effused. Sporidia filiform.*

HYPOCRELLA, Sacc. Syll. II, p. 579,

a. Perithecia subconfluent.

53. HYPOCREA PHYLLOGENA, Mont. Syll., 711.

“Stroma pulvinate, hemispheric, base constricted and orange-colored; perithecia peripheric, erect, ovate and, with the punctiform ostiola, bright purple, sunk in the upper part of the stroma, which is of the same color; asci linear with the apex cap-shaped or obtusely conic; sporidia linear, curved, finally breaking up into segments 16—18 x 2 μ . On living leaves of *Cantarea Cayenne*.” We have included this species, which will not improbably yet be found in Southern Florida or Mexico.

54. HYPOCREA HYPOXYLON, Pk. 27th Rep. N. Y. State Mus., p. 108. On stems of living grasses. Maine and Florida (Scribner), New York (Peck.), New Jersey (Ellis), Massachusetts (Farlow).

“Convex or pulvinate, subconfluent, blackish externally, white within; seated on a whitish or gray subiculum; ostiola prominent; asci very long and linear; spores elongated, filiform, multinucleate, colorless.” According to Farlow, in Bull. Bussey Inst., this is not distinct from *Dothidea vorax*, B. & C., of which *D. atramentaria*, B. & C. (N. A. F., 683), is only a variety, and we now suspect that *Ephelis borealis*, E. & E., Journ. Mycol. I, p. 86, is only the stylosporous stage of the same thing. There is some uncertainty as to whether Peck or Berkeley has priority of publication, also as to the true place of species in the systematic arrange-

ment. In the Newfield specimens, which were on *Panicum (capillare ?)*, the fungus forms an even layer entirely surrounding the culm, just below the internodes, with just the same habit as *Epichloe typhina* and without any tubercular projections, as in the specimens from all the other localities mentioned.

55. *HYPOCREA ATRAMENTOSA*, B. & C. Journ. Linn. Soc. X, p. 377.

"Forming a thin black stratum on the under side of the leaves of grasses in Cuba and of *Andropogon* in Alabama. Perithecia globose and, with the ostiola, immersed; sporidia filiform." Does this differ from *Dothidea atramentaria*, B. & C.?

b. Perithecia separate.

56. *HYPOCREA TUBERIFORMIS*, B. & Rav. Grev. IV, p. 13. Rav., F. Am., 733. "Magna, tuberiformis, mycelio radiato, albo affixa." On stems of *Arundanaria*. Car. Inf., Ravenel, No. 1220.

"Forming either a large mass $\frac{3}{4}$ of an inch across or two or three distinct, subglobose individuals, fixed to the stem by a radiating, white, rugose mycelium; at first yellowish, then black."

Apparently, the original specimens were imperfect and, as those in Rav. F. Am. are either young or sterile, we can only say that the perithecia are subcylindrical and stand on the stroma like the young horns of *Podisoma macropus*, about 1 millim. high.

The following species are imperfect or obscure :

57. *HYPOCREA PARASITANS*, B. & C. Grev. IV, p. 15.

"Minuta, subelliptica, pruinosa, pallida; sporis majoribus, subglobois. On *Hydnum erinaceum*, Car. Inf., No. 6190. Minute, pallid, subelliptic, sometimes winding around the teeth; spores globose, rather large."

58. *HYPOCREA SUBVIRIDIS*, B. & C. Grev. l. c.

"Effusa pallide viridis tomentosa in mycelio niveo insidens. On dead grass leaves. Car. Inf., 4955. Effused; perithecia pale dull green, tomentose, crowded, seated on a white mycelium. A curious species."

59. *HYPOCREA STERILIOR*, Schw. Syn., N. Am., 1188.

"Substance at first rather soft, broadly effused, applanate, surface longitudinally striate, flesh-color, becoming light yellow. When dry, the margin is very delicate, cottony, with interwoven fibres, with which the whole appears smoothly (lightly ?) covered; texture carnose-horny; perithecia few, scattered; about an inch in circumference and two lines thick."

60. *HYPOCREA SUBLOBATA*, Schw. Syn., N. Am., 1225.

"Scutellate, small, slightly attached, margin obtuse, lobate-repand, black, then subolivaceous; surface flat, rugulose; perithecia subperipheric, in a single layer, becoming yellow, immersed in the light yellow stroma; ostiola impressed; not exceeding 2—3 lines in diam. On bark of *Platanus*. Bethlehem, Pa."

61. *HYPOCREA MOLLIUSCULA*, Schw. Fr. Elench. II, p. 66.

“Minute (1 line across), round, plano-convex; perithecia small, entirely hidden, connate, surface of the stroma roughened by the ostiola, pruinose, sooty-black. On rotten wood. Pennsylvania.”

GEN. V, *HYPOMYCES*, FRIES.

Mostly parasitic on other fungi. Subiculum (stroma) cottony-velutinous.

* *Sporidia continuous*.

62. *HYPOMYCES VAN BRUNTIANUS*, Ger. Bull. Torr. Bot. Club, IV, p. 64.

Perithecia globose, densely crowded, pallid, hygrophanous, immersed, with a short, thick, exserted, obtuse mouth; subiculum white; sporidia oblong, hyaline, shortly apiculate at the broad end, obtusish at the other, $14-16 \times 3\frac{1}{2}-4\frac{1}{2} \mu$; asci cylindrical. On the pileus, stipe and gills of an unknown *Agaric*. Poughkeepsie, N. Y. (Gerard), Iowa, (Holway).

63. *HYPOMYCES VIRIDIS* (A. & S.). Consp., p. 8. Sacc., Syll. II, p. 472. On *Agaricus alutaceus*, Carolina (Ravenel), Pennsylvania (Michener), New England (Sprague).

Stroma broadly effused, with a dirty, yellowish-green tomentum and sterile margin; perithecia closely packed, ovoid or sphaeroid, pale, with their conical apices projecting and becoming dark brown or black. Asci cylindrical, $170-180 \times 7-8 \mu$, containing eight elongated, straight or curved, mucronate sporidia, $28-30 \times 5 \mu$, yellowish-hyaline, continuous or with the endochrome sometimes 2-parted.

64. *HYPOMYCES POLYPORINUS*, Pk. 26th Rep. N. Y. State Museum, p. 84. On *Polyporus versicolor*, N. Y. (Peck).

Perithecia minute, ovate or subconical, seated on a pallid subiculum, smooth, yellowish or pale amber; asci narrow, linear; sporidia fusiform, acuminate at each end, nucleate, $15-18 \mu$ long. The outward appearance is almost exactly the same as that of *Hypocrea pallida*, E. & E.

65. *HYPOMYCES APIOSPORUS*, Cke. Grev. XII, p. 80. On *Clavaria pistillaris* (?) N. Y. (Gerard).

Effused, pale, thin; perithecia semi-immersed, slightly papillate (honey color when dry), ostiola indistinct; asci cylindrical, eight-spored; sporidia lanceolate, apiculate above, rounded below, minutely roughened, continuous, yellowish (except the apiculus), $18 \times 6\frac{1}{2} \mu$.

66. *HYPOMYCES BANNINGII*, Pk.

“Subiculum white, then sordid; perithecia crowded, ovate with a papilliform ostiolum, pale amber or honey color; asci slender, cylindrical; spores uniseriate, oblong-fusiform, white in the mass, $30-37 \times 4-5 \mu$. Decaying fungi, apparently some *Lactarius*. Baltimore, Md. Miss Banning. The spores, in our specimens, are simple, but they may possibly become uniseptate when old.” Copied from Bot. Gaz., IV, p. 139.

(To be continued.)

NOTES ON FLORIDA FUNGI.--No. 5.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

In previous papers, I mentioned some of the most prominent species of fungi,—or such as would naturally claim the attention of a tyro in this study. In this, I will consider a few forms that are not found without considerable trouble, much hard work, and frequently an abundance of bruises and scratches, to say nothing of the danger incurred from arousing a snake from its lair. I have often gone over a piece of woods and secured, as I supposed, everything of value, but repeated trials on the same ground have convinced me of my error and surprised me by the results obtained. In Florida there are some species found only in certain favorable localities and in certain woods. *Polyporus Salleanus*, B., a most beautiful species, and not common, occurs on dead hickory limbs lying on the ground and more sparingly on *Magnolia glauca*. *Lenzites corrugata*, is found on old limbs in moist places. *Hydnum læticola*, B. & C., is very rare here, but fine, and can only be found by searching on low grounds very closely, and then weeks may pass without finding it. *Hydnum fragillissimum*, B. & C., is equally rare and only a few specimens have rewarded my efforts. Both of these species affect the under side of rotten limbs in dark forest shades. *Kneiffia Setigera*, Fr., in the same situations, is also not common.

PHOSPHORESCENT FUNGI.

Some time last fall (1885), Prof. Thos. G. Gentry, of Philadelphia, Pa., called my attention to the fact that *Panus stypticus*, Fr., is phosphorescent. Prof. G. had collected some specimens of this species and laid them with other fungi on a shelf to dry. On examining the specimens the same evening, it was found that the gills of the *Panus* were distinctly phosphorescent, a fact which I have been able to verify by my own observation of specimens, soon after collected at Newfield. By careful examination, the luminosity was found to proceed from the gills and not from the stipe, nor from the upper surface of the pileus, nor, finally, as was at first suspected, from any fragment of rotten wood attached to the specimen. This phosphorescence was not observed in all specimens brought in for examination, and seemed to depend on some peculiar condition of the air, having been noticed only in specimens gathered in damp weather or just before a storm.

In his "Introduction to Cryptogamic Botany," p. 265, Berkeley observes that "this luminosity has been noted in various parts of the world; and where the species has been fully developed it has been generally some species of *Agaricus* that has yielded the phenomena. *Agaricus*

olearius, of the south of Europe, is one of the best known, but other species have been observed, as *Ag. Gardneri*, Berk., in Brazil; *Ag. lampas* and some others in Australia; in Amboyna, by Rumpf, &c. Mr. Babbington has observed imperfect mycelia extremely luminous near Cambridge; and Dr. Hooker speaks of the phenomena as common in Sikkim, though he was never able to detect the species to which it was due. Beautiful, however, as the effect may be in these instances, it is far excelled by the phosphorescent appearance presented by *Rhizomorphae* in mines, the splendor of which is described by Humboldt in the most glowing colors."

From the remarks above quoted, it appears that the number of phosphorescent fungi specifically known is not large. It is not probable that *Panus stypticus* is the only North American species possessing this peculiarity, though, so far as I know, it is the only one thus far noted.

J. B. E.

NEW LITERATURE.

BY W. A. KELLERMAN.

"A FUNGOUS DISEASE OF EUCHARIS." W. B. Grove, B. A. *The Gardener's Chronicle*, March 27th, 1886. This article, illustrated by five wood cuts, deals with the ravages and the characters of *Saccharomyces glutinis*. Cohn. in a very clear, interesting and instructive manner.

"NUOVO SPECIE DI POLYPORUS SCOPERTA E DESCRITTA." da F. Panizzi. *Nuovo Giornale Botanico Italiano*, Aprile, 1886."

"SULLO SVILUPPO DI DUE NUOVI HYPOCREACEI E SULLE SPORE-BULBILLI DEGLE ASCOMICETI." Recherche del Dott. O. Mattirola. l. c.

"REBENHORST'S KRYPTOGAMEN-FLORA—PILZE VON DR. G. WINTER. 22 LIEFERUNG. SPHÆRIACEAE."

ERRATA.

Page 28, Vol. II, eighth line from top, for "carrose" read "cerose."

Page 51, Vol. II, fifth line from bottom, for "nearly" read "merely."

The article on "UNCINULA POLYCHÆTA," in No. 5, was intended by the author to be inserted in place of a similar one in No. 4. but, by oversight, both were printed.

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MANHATTAN, KANSAS, JULY, 1886.

No. 7.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 69.)

67. *HYPOMYCES TRANSFORMANS*, Pk. 29th Rep. New York State Mus., p. 57. On *Cantharellus cibarius* which it transforms into an irregular mass. New York (Peck), Massachusetts (S. J. Harkness), Pennsylvania (Everhart).

Subiculum effused, variable in color, pallid, golden-yellow, ochraceous or brick-red; perithecia ovate or subglobose, papillate, sunk in the subiculum; ostiola prominent, obtuse, amber or orange; asci cylindrical; sporidia fusiform, apiculate at each end, somewhat rough, continuous or rarely with the endochrome obscurely divided, colorless, 33—38 μ long.

68. *HYPOMYCES GEOGLOSSI*, E. & E. On *Geoglossum (glabrum)*? Newfield, N. J., September, 1876. Occupying the greater part of the hymenium of the host, the proper fruit of which is mostly suppressed.

Perithecia immersed, subglobose (75—80 μ), subangular from mutual pressure; ostiola papilliform, black; asci clavate-cylindrical, subsessile, yellowish, 75—80 x 6—7 μ , containing eight crowded, subbiseriate, clavate-oblong, continuous, hyaline, 6—8 x 2½—3 μ , sporidia. The subiculum appears to be obsolete, the perithecia being immersed in the hymenium of the host. As no notes were taken on the fresh specimens, the color of the perithecia can not be certainly stated, but in the dry specimens, they are nearly or quite black.

69. *HYPOMYCES XYLOPHILUS*, Pk. Bull. Tor. Bot. Club, XI, p. 28.

Subiculum effused, whitish; perithecia numerous, crowded, small yellowish, with a blunt ostiolum; asci cylindrical, 90—112 x 6—7½ μ ; sporidia continuous, uniseriate, subfusiform, 15—17 x 5—6 μ . On decaying wood. Ohio (Morgan).

70. *HYPOMYCES HYALINUS*, Schw. Syn. Car., No. 35. On *Russula foetens*. Carolina (Schw.)

Effused, thin, glabrous, hyaline-fuscos, roughened with the crowded, dark-colored ostiola; asci cylindrical, 8-spored; sporidia elliptic-fusoid, $15-20 \times 4\frac{1}{2}-5 \mu$, uniseriate, continuous, greenish-hyaline.

* * *Sporidia uniseptate.*

71. *HYPOMYCES LATERITIUS*, Fr. On the hymenium of several species of *Lactarius*. New England (Murray & Sprague), Carolina, on *Lactarius Indigo* (Ravenel), Potsdam, N. Y. (Ellis).

The mycelium forms a dense, white, felt-like stratum, which finally becomes more compact and of a pale brick color; perithecia spherical or subovate, abundant, sunk in the stroma, except their slightly prominent, smooth, brownish ostiola; asci cylindrical, $200-250 \mu$ long, spore-bearing part $112 \times 6-7 \mu$; sporidia uniseriate, elongate-fusiform, uniseptate, acuminate at each end, yellowish-hyaline, $18-20 \times 4-4\frac{1}{2} \mu$.

72. *HYPOMYCES AURANTIUS*, Pers. On *Stereum* and on the under side of logs. Carolina. (Ravenel.)

Perithecia gregarious, subsphaeroid, their apices projecting from the effused, orange-colored subiculum; asci cylindrical, 8-spored, $110-140 \times 6 \mu$; sporidia uniseriate, uniseptate, fusoid, with the ends subapiculate, slightly curved, nearly smooth, $15-24 \times 5-6 \mu$, hyaline. The white mold, *Diplocladium minus*, Bon., is said to be its conidial stage.

73. *HYPOMYCES LACTIFLUORUM*, Schw. Syn. Car., No. 34. On *Lactarius*, especially *L. piperatus*. Carolina (Ravenel), Pennsylvania (Everhart), New Jersey (Ellis).

In the affected specimens of *Lactarius*, the gills are entirely obliterated, so that the hymenium of the *Agaric* presents an even, orange-colored surface in which the subglobose perithecia are thickly bedded with only their slightly prominent reddish ostiola visible; asci long and slender; sporidia uniseriate, fusiform, straight or slightly curved, rough, hyaline, 1-septate, cuspidate, pointed at the ends, $30-38 \times 6-8 \mu$. The general appearance is much the same as that of the preceding species, but it differs in its larger, rough, warted sporidia and the absence of the felt-like mycelium. In decay, the color changes to a purplish red.

74. *HYPOMYCES ROSELLUS* (A. & S.) Consp., p. 88, tab. 7, fig. 3. On various decaying fungi and on the ground or on leaves and rubbish near where fungi have decayed. Pennsylvania (Michener & Everhart), Plainfield, N. J. (Meschutt).

Mycelium lax, effuse, consisting of loosely-woven threads, at first white and bearing conidia (*Tricothecium agaricinum*, Bon.), then deep rose-color or nearly blood-red; perithecia deep rose-red, subspherical or ovoid, of variable size, buried in the stroma, except the projecting, rather obtuse papilliform ostiole; asci linear, $150 \times 6-7 \mu$, with eight uniseriate, narrowly lanceolate, apiculate, straight or slightly curved, hyaline, $22-37 \times 5-7 \mu$ sporidia, nucleate or spuriously 1-3-septate and often subinequilateral.

Dr. C. B. Plowright, in his valuable monograph of this genus in *Grevillea*, Vol. XI, says: "There are two varieties of this species, one with larger, pointed perithecia, as figured by Greville and by Albertini & Schweinitz; the other, with smaller and more obtuse perithecia. The sporidia vary a good deal in size, as does the color of the subiculum, which is sometimes nearly absent. Sometimes it is almost white, but mostly rose colored, with a whitish margin." The specimens from Mr. Meschutt were on decaying leaves, forming little patches $\frac{1}{2}$ —1 cm. across.

75. *HYPOMYCES OCHRACEUS*, Pers. On decaying *Agaricus*. Pennsylvania (Michener).

Perithecia crowded, subglobose, yellowish, immersed, with a short, thick, obtuse, exserted ostiolum; subiculum (*Verticillium agaricinum*, Cda.) at first white, then straw-colored, ochraceous and yellow; asci cylindrical, $25\text{--}30 \times 6\frac{1}{2} \mu$, containing eight oblong-lanceolate, uniseptate, constricted, $35 \times 6\frac{1}{2} \mu$ sporidia, which are mucronate at each end.

76. *HYPOMYCES ASTEROPHORUS*, Tul. Parasitic on *Nyctalis*. Carolina. (Ravenel.)

Perithecia originating in an effused, byssoid stroma, in which they are thickly strewn, ovoid or sphaeroid, narrowed above into a more or less elongated neck, with an acute, pervious, ciliate ostiolum, pale, yellowish-brown, subhyaline, 150μ high by $70\text{--}90 \mu$ broad; asci broadly ovate, abruptly attenuated below, $40\text{--}50 \times 18\text{--}20 \mu$, containing 4—6 narrowly lanceolate, slightly curved, mucronate at each end, 1-septate, subhyaline, then dirty-yellow, $25\text{--}35 \times 6 \mu$ sporidia.

Dr. Plowright, in his monograph already cited, says: "The perithecia of this species of *Hypomyces* differ considerably from those of the other members of the genus. They are formed of very large polygonal cells, which become elongated and parallel where they form the ostiolum and are formed by the intertwining of the dilated and convoluted bases of the conidial-bearing hyphæ that compose the stroma. These (the perithecia) are most frequently found upon the inside of the stem of the *Nyctalis*, but they are by no means of common occurrence."

77. *HYPOMYCES TOMENTOSUS*, Fr. Found on same *Agaric*. Berkeley. Notices of N. Am. Fungi, in *Grevillea* IV, p. 15.

Of this species, but little appears to be known. It is stated by Cooke, in *Grevillea* XII, p. 80, that the asci are cylindrical and the sporidia lanceolate, mucronate at each end, uniseptate, hyaline and $42\text{--}50 \times 6\text{--}7 \mu$.

78. *HYPOMYCES INSIGNIS*, B. & C. Fungi Mexico, No. 6, p. 424.

Red; mycelium effused; perithecia oblong, more deeply colored; sporidia fusiform, apiculate at each end, 37μ long, spuriously 1-septate, hyaline. On the hymenium and pileus of *Cantharellus*, which it covers with a red stratum and obliterates the gills. In Mexico, near Orizaba (Botteri).

The above is copied from Saccardo's *Sylloge*, Vol. II, p. 472, and is all we know of this species. From the brief description, one might suppose that this and *H. transformans*, Pk., are the same.

79. *HYPOMYCES TEGILLUM*, B. & C. Grev. IV, p. 15. "On pine. Carolina. (Ravenel).

"Perithecia ovate, rufous-brown, scattered, a continuous white mycelium, like thin parchment."

80. *HYPOMYCES FLAVESCENS*, Schw.

Perithecia gregarious, distinct, globose-ovate, papillate, whitish, covered with a villose coat that finally disappears, seated on a milk-white, broadly effused, pubescent subiculum; asci cylindrical; sporidia narrowly-elliptical, hyaline (uniseptate)? On hymenium of some resupinate *Polyporus*. Pennsylvania (Schweinitz.)

81. *HYPOMYCES PANNOSUS*, Schw.

Stroma effused, whitish, shaggy, thin, margin fimbriate-cottony; perithecia semi-immersed, pale, with dark-colored, punctiform ostiola; asci cylindrical; sporidia (?) On rotten wood. Ex. Herb. Schw. The descriptions of this and the preceding species are taken from Grevillea XII, p. 80, and were, apparently, made from specimens in Herb. Berkeley. They are not in Schw. Synopsis N. Am. The *H. pannosus* here described is said to be a different thing from the *Sphaeria pannosa*, Fr.

In the next two species, the fructification is unknown.

82. *HYPOMYCES TUBERICOLA*, Schw. Syn. N. Am., No. 1192. On an old "White Tuber" infesting the outer bark. Found at Pocono, Pa.

Effused, thin, brown-black, margin scarcely determinate; perithecia at first subimmersed, finally erumpent ("omnino prominulis"), brown-black, rugose tuberculate, minute, subconic, densely crowded, at length collapsing. The interior of the perithecia is said to be entirely similar to that of the preceding species, *i. e.*, *H. Lactifluorum*, etc. Whether the "White Tuber" is an old specimen of *Pachyma cocos* is uncertain.

83. *HYPOMYCES BOLETICOLA*, Schw. Syn. N. Am., No. 1494. Found but seldom on very much decayed *Polyporus citrinus*, at Bethlehem, Pa. Allied to *H. aurantia*, Fr., but distinguished by its paler color, by the character of the subiculum (stroma) and shape of the perithecia; subiculum effused, interrupted, of loose texture, with irregular spaces ("plagis irregularibus"), pale orange with the margin whitening out; perithecia only partially immersed, conic-ovate, more or less scattered at first, colored like the stroma, at length orange-red, rather soft, papillate, easily separating from the stroma, leaving small cavities, contents of the perithecia very white, at length oozing out and remaining attached to the ostiola like a white villous pubescence.

MYCOGONE CERVINA, Ditm, which is found on *Helvella* and on various decaying *Pezizas* and *Asterophora Pezizæ*, Cda., on *P. hemispherica*, both of which are found here, are, with several similar molds, regarded as the conidial stage of different species of *Hypomyces*, of which the ascigerous stage has not been found.

GEN. VI, *POLYSTIGMA*, PERSOON.—(Moug. et Nest, No. 270). Stroma subcarnose, effused, colored (ochraceous, red or yellow), phyllogenous; perithecia immersed; asci 8-spored; sporidia ovoid, continuous, hyaline.

84. POLYSTIGMA RUBRUM (PERS.), D. C.

(*Xyloma rubrum*, Pers. Syn., 105; *Dothidia rubra* (Pers.), Fr. S. M., 553.) Hypophyllous, suborbicular, slightly convex, 2—4 millim. across, with an even margin, red, at length darker; perithecia (cells) small, immersed, reddish; ostiola impressed, punctiform, becoming more prominent; asci clavate, 8-spored; sporidia ovoid, subobtuse, straight, subhyaline, $10 \times 6 \mu$. The spermogonial stage is *Libertella rubra*, Bon. Spermatia filiform, uncinat, 30μ long. On living leaves of several species of *Prunus* (*P. domestica*, *P. spinosa*). In Saccardo's Sylloge, the species is credited to this country, but we are not aware by whom or where collected.

85. POLYSTIGMA (?) BUMELIÆ, Schw.

(*Dothidea Bumeliæ*, Schw. Syn., N. Am., No. 1884.) Epiphylous on living leaves of *Bumelia oblongifolia*, found in the Arkansas region by Nuttall. Stroma orbicular, large $\frac{3}{4}$ cm. and over, ovate or of somewhat irregular shape, conspicuous on both sides of the leaf, on the upper side brick-red and somewhat shining as if varnished, paler and without any varnished appearance below; perithecia (cells) few, scattered, minutely pseudo-ostiolate and subprominent.

GEN. VII, NECTRIA, Fries.—Perithecia carnose-membranaceous, mostly bright colored, cæspitose and generally seated on a subcarnose stroma (tubercularia); sporidia oblong or fusoid, hyaline.

A. *Sporidia continuous*.

* *Asci polysporous* (*Chilonectria*).

86. NECTRIA CUCURBITULA, Curr.

Perithecia cæspitose, orange-red, nearly smooth, at length collapsing; ostiolum papilliform, minute; asci clavate-cylindrical, $75-100 \times 10-12 \mu$, filled with countless minute sporidia, $2-3$ (mostly $2\frac{1}{2} \mu$) $\times 1-1\frac{1}{4} \mu$. In the early stages of growth, the asci contain $2-4$ cylindrical bodies about 3μ thick and varying in length from 15μ to nearly the entire length of the asci. These elongated bodies are subundulate and often appear distinctly multiseptate with the septa either running square across or with their ends a little curved so as to give the appearance of a series of hyaline, subglobose sporidia, but finally these cylindrical bodies are filled with the minute sporidia, which at length fill the entire cavity of the asci. Sometimes, instead of the elongated bodies, some of the asci will be seen to contain one or two series of faintly-outlined, subglobose cells, which, also, are at length filled with the minute sporidia and disappear. The peculiarity here noted has been observed in all the specimens on coniferous trees thus far examined and we fancy we see the same structure in the *N. cucurbitula*, issued by Fries in his Sclor. Suec., which we have had the opportunity of examining. On *Pinus rigida* and *P. strobus*, Newfield, N. J., and on *Abies balsamea*, West Chester, Pa. According to Saccardo, in Sylloge, found also on various deciduous trees.

87. *NECTRIA CORYLI*, Fekl.

Perithecia caespitose, erumpent, smooth, subastomous, dark red, collapsing when dry, not differing in appearance from those of the preceding species, unless in being of a deeper shade of red; asci clavate, 75—100 x 10—12 μ , mostly filled with minute sporidia, exactly as in the preceding species, but some contain cylindric-fusoid (sporidia)? 1-septate, 10—15 x 2½—3 μ , with a short, curved apiculus at each end. These fusoid sporidia, lying in two or three series in the asci, are so arranged with their contiguous ends in contact as to resemble, closely, the cylindrical bodies mentioned in the preceding species and, like those, are often seen filled, more or less completely, with the minute, oblong sporidia. This species is found exclusively on bark and limbs of deciduous trees. According to Dr. Rehm, the specimens in N. A. F., 159, belong here. We are inclined to think that *N. Coryli*, Fekl., is only a form or var. of *N. cucurbitula*, Curr., which is restricted in its habitat to coniferous trees as *N. Coryli* is to deciduous trees. There are three *Nectrias* with the specific name *cucurbitula*, of which the one already described is now recognized by mycologists as *N. cucurbitula*, Curr., while another species (on conifers) with oblong biconoid, 1-septate sporidia is known as *N. cucurbitula*, Tode., and still another, with oblong-fusoid, 5—6-septate sporidia, is known as *Nectria (Calonectria) cucurbitula*, Fr. We are not aware that these last two species have yet been found in this country.

88. *NECTRIA INAURATA*, B. & Br.—We have seen no American specimens of this species, and copy the following description from Cooke's Hand-book:

“Caespitose; perithecia globose, then depressed, at length brown, tinged with red, frosted with yellow; ostiola papilliform, at length impressed, naked, black-brown; asci and sporidia of two kinds—some clavate, with numerous small, curved sporidia, others cylindrical, with eight elliptical sporidia, appendiculate at each end. The larger asci are clavate, containing curved, minute sporidia, not exceeding 3½ μ . The smaller cylindrical asci contain eight elliptical, 1-septate sporidia, 12½—15 μ long, furnished with a delicate, hyaline appendage at each end.”

It is to be noted that the above-quoted description of the fruit applies well to that of *N. Coryli*, Fekl., and the specimens of *N. inaurata*, in Saccardo's Mycotheca Veneta, No. 1446 (which are the only ones we have examined), do not differ, as far as we can see, either in the perithecia or the fructification, from the specimens in N. A. F., 159, which (see Dr. Rehm) are *N. Coryli*, Fekl.

B. *Sporidia uniseptate; asci 8-spored.*

89. *NECTRIA CINNABARINA*, Tode.

Stroma (*Tubercularia vulgaris*, Tode,) pulvinate, subhemispheric, subcarnose, yellowish, conidiiferous; perithecia caespitose, vermilion-red, at length darker, rough, with a papilliform ostiolum; asci clavate-

cylindrical, subattenuated above, 75—90 x 8—11 μ ; sporidia sub-biseriate, oblong, obtuse at each end, uniseptate, straight or slightly curved, hyaline, 12—15 x 5—7 μ . On limbs of various deciduous trees. Common.

90. *NECTRIA RIBIS*, Tode.

Stroma and perithecia much the same as in the preceding species, except that the latter are rather smoother and the sporidia mostly longer, 13—20 x 4—6 μ (mostly about 16 x 4—4½ μ). We have examined the specimens in Vize's *Micro-fungi Britannici*, 153, and in Plowright's *Sphæriacei Britannici*, 211, and the slight differences indicated above are all we can see to separate this from *N. cinnabarina*. Specimens on gooseberry twigs sent from Canada by Prof. Macoun agree well with the English specimen, only the sporidia are rather narrower, mostly not over 4 or 4½ μ . The Canada specimens are the only ones we have seen collected here, and we do not see it mentioned by Berkeley in his *North Am. Fungi in Grevillea*.

91. *NECTRIA RUBICARPA*, Cke. Grev. VII, p. 50.

“Cæspitose, red, scarcely papillate, obtusely verrucose-roughened; asci cylindrical, 65—75 x 6—7 μ ; sporidia uniseriate, elliptical, uniseptate, 10—12 x 4—4½ μ , mostly not much constricted. Looks like a miniature red raspberry, both in the clusters and individual perithecia, the latter becoming eventually nearly even.” On dead limbs of *Gelsemium*. So. Carolina (Ravenel). In our copy of *Rav. F. Am.*, the specimen (No. 341) has the perithecia distinctly collapsed. In his diagnosis of his *Ascomycetes*, under No. 337, Dr. Rehm refers the specimens of *Nectria punicea*, Kz. & Schm., in *N. A. F.*, No. 80, to *N. rubicarpa*, Ck. We have carefully compared the *N. A. F.* specimens with *N. rubicarpa*, in *Rav. F. Am.*, and they seem to us to be the same thing. Referring to our exsiccati, we find in Plowright's *Sph. Brit.*, No. 206, a specimen labeled *N. punicea*, Kz. & Schm., in which the perithecia are not collapsed and the sporidia 15—19 x 4—5 μ , which are about the measurements given in *Sylloge*. The specimen of *N. punicea* in Roumeguere's *Fungi Gallici*, No., 1465, we can not distinguish from *N. cinnabarina*, Fr. If the specimen of *N. punicea* in Plowright's *Sph. Brit.* is authentic, the *N. A. F.* specimens can hardly be that species, having most of the sporidia less than 12 μ long, but the *N. A. F.* specimens agree better with the original description of *N. punicea* in their collapsed perithecia than do those in *Sphæriacei Britannici*. We have then, for the present, to leave the matter in doubt. The specimens in *N. A. F.*, 772, do not appear to be *N. rubicarpa*, Cke.

92. *NECTRIA COCCINEA*, Pers.

Perithecia cæspitose, ovoid, smooth, bright red, papilliform, about one fifth millim. in diam., usually not collapsing, seated on a yellowish, slightly erumpent stroma, which is often nearly obsolete; asci subcylindrical, 80—95 x 6—7 μ ; sporidia uniseriate, uniseptate, hyaline or nearly so, scarcely constricted, rather acutely elliptical, 12—15 x 4½—5 μ (12—16 x 5—7, Sacc.) On bark of various deciduous trees. Common.

93. *NECTRIA RUSSELLII*, B. & C. Grev. IV, p. 45.

“Cæspitose, red, inclining to brown; ostiolum papilliform, at length sunk from collapsing; sporidia cymbiform, uniseptate, 15—20 μ long. On elm, New England, Russell.” *Var Magnolice*, Sacc., differs somewhat from the type in its shorter (10—11 x 5—6 μ) sporidia, slightly constricted, with the lower cell a little narrower and the perithecia at length collapsing. On bark of *Magnolia*, So. Ca. (Ravenel).

94. *NECTRIA OFFUSCATA*, B. & C. Grev. IV, p. 45.

“Cæspitose, dingy, dark, brown-red, minutely granulated, ostiolum depressed; asci clavate; sporidia biseriate, oblong, about one fourth as broad as long; externally resembling *N. Russellii*. On *Hibiscus*. South Carolina.”

95. *NECTRIA DITISSIMA*, Tul.

Perithecia densely gregarious, small, subglobose, bright red, vertically collapsed when prematurely dried; ostiolum papilliform, minute; asci clavate, about 80 μ long and 8—10 μ broad above, contracted below into a slender base; sporidia crowded, biseriate, fusoid-oblong, 1-septate, slightly curved, 14—16 x 4—4½ μ . On dead *Acacia*. So. Ca. (Ravenel), on *Melia*, Louisiana (Langlois).

96. *NECTRIA VERRUCOSA*, Schw. Syn. N. Am. 1401.

Perithecia cæspitose, ovate-globose, verrucose-roughened, pale red, not collapsing, about ½ millim. in diam., seated on an orange-red, depressed, globose, substipitate stroma (*Tubercularia*), forming groups 1—2 millim. in diam.; asci oblong-cylindrical, with a short, substipitate base, 60—70 x 10—12 μ ; sporidia biseriate, oblong, uniseptate, 12—16 x 4—5 μ . The stroma, as in most other *Nectrias*, is finally hidden and partially obliterated by the perithecia. Common on *Morus* and *Sassafras*, Pennsylvania (Schweinitz), on *Morus*, *Melia*, etc., So. Ca. (Ravenel) and on *Morus*, N. Jersey (Ellis). Differs from *N. cinnabarina* in the peculiar roughening of the perithecia and in its shorter asci and mostly narrower sporidia. *N. coccinea* has the perithecia nearly smooth or when dry slightly furfuraceous.

(To be continued.)

NOTES ON FLORIDA FUNGI.--No. 6.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

My observations, thus far, justify the opinion that not many species are to be found in the pine woods section nor on the genus *Pinus*. Even dead trees and limbs are singularly bare of this order. This may be due to the resinous properties of the pine and also to the fact that pine woods are generally open, admitting much light and sunshine. In part, also.

the soil—or rather *sand*—is dry and remains so, no undergrowth, except young pines, springing up. *Lenzites sepiaria*, Fr. seems to be the favored denizen of the dead pine and not abundant. This rule holds good in places where the pine grows along with hard wood species and is then not gregarious, as in the pine barrens proper. I have examined numbers of fallen pines in both situations, and can only report, besides the above, a very few specimens of *Irpex*(?) and of *Polyporus carneus*, the latter a resupinate form and so rare that I have never found over one half dozen specimens. In the absence of other support, the pine becomes, in the struggle of the Fungi for existence, a dernier resort, and it seems a poor one. Where the soil is such as to produce a growth of hard wood—and thirty or forty species on a few acres is not uncommon—there will be found all the conditions of shade, dampness and decay, so necessary to the prolific development of the great family we are considering.

TWO NEW SPECIES OF CYLINDROSPORIUM.

BY J. B. ELLIS AND W. A. KELLERMAN.

CYLINDROSPORIUM TRADESCANTLÆ, E. & K.—On living leaves of *Tradescantia Virginica*. Manhattan, Kans., June, 1886. (Kellerman, 837.) Conidia erumpent in little flesh-colored heaps, cylindric-vermiform, a little narrower at one end, 65–80 x 4–5 μ , 4–6-septate (granular and nucleate at first); hyphæ obscure, nearly obsolete. The affected leaves are stained purplish.

CYLINDROSPORIUM ANGUSTIFOLIUM, E. & K.—On living leaves of *Yucca angustifolia*. Manhattan, Kans., June, 1886. (Kellerman, 838.) Spots amphigenous, oval, $\frac{1}{2}$ – $\frac{3}{4}$ x $\frac{1}{4}$ cm., yellowish-brown, with a darker border; acervuli erumpent, olivaceous, covered by the cuticle for some time; conidia scarcely distinguishable from those of the preceding species; hyphæ simple, short, consisting of two or three concatenated cells of the proligerous layer. The general appearance is that of *Phoma concentricum*.

SKETCH OF JOHN F. BEAUMONT.*

BY THOS. M. PETERS, A. M., MOULTON, ALA.

PROF. JOHN F. BEAUMONT, according to his own account, was born in the state of Pennsylvania, about 1825. He died at Troy, in Henry county, Ala., about the end of the late civil war. In size, manners and conduct, as well as name, he was a Canadian Frenchman, but he did not

This interesting account of Prof. Beaumont was sent me some months ago with the request that I “construet” from it a sketch for publication in the JOURNAL. No abridgment seemed necessary, and, besides, it would lose much if it did not appear in the form in which Judge Peters himself furnished it. K.

speaking or reading French. He said he was of a German family and raised in that state. He spoke and read German with ease and fluency. His education was fair. He was a fair mathematician, read Latin well, had picked up a little Greek so as to comprehend the Greek nomenclature in science. He was intelligently instructed in the scientific curriculum of the time. He discussed, understandingly, most scientific subjects, and was a most earnest enthusiast in botany, in all its branches. I first met him about 1852 in the family of the late Judge D. Ligon, at Mountain Home, in Lawrence county, Ala. He was residing there as a private teacher in Judge Ligon's family, who had been my partner in the practice of law, in Moulton, Ala. The Judge told me I would like him, as his tastes were very much like my own. I became acquainted with him, and found him intelligent and an invaluable assistant in the whole field of natural science. I invited him to my office. I told him I had Fries' works on Funguses and Lichens, and Prayer's Botanical Mycology, which I had imported. He was very much surprised that we could get such books from France and Sweden, away here in the middle of the forest. I told him we did not live in the forest: we lived with Nature, and God regulated it, and where intelligence existed, there was no forest! Ignorance made forests and the devil ruled them. In nature, the heavens were stretched out over us for a temple, and if we had pure hearts and enlightened minds, we would sit in it, always near the Father, and pray to him between the Cherubim in the Holy of Holies, besides a great deal more of the same sort. Next Sunday, he walked seven miles to visit me at my office and examine my books and specimens. I gave him Prof. Edw. Tuckerman's elegant description of lichens, and he was ready to fall down and worship him. I also permitted him to examine some of his preparations. After that he called Tuckerman "The Master." I had the photographs of Prof. Tuckerman, of Rev. Dr. M. A. Curtis and Mr. Ravenel. I introduced him to them. He said they were all "Masters," and he would straitway fall in love with them. I told him to them love was help, and what they needed was his assistance. I showed what I was doing and had been doing. That was what these distinguished scientists most needed. Henceforth he became their correspondent and so continued up to his death, as will be seen in their various publications. .

I did not then know a mycological botanist in all the South outside this little circle. To-day they may be gathered in hosts. And now all are gone, save Prof. Tuckerman, Mr. Ravenel and myself, and we have, all of us, about passed over the Biblical limitation, and must soon follow the rest, for —

"There is no discharge in that war."

Prof. Beaumont, in the early part of 1855, joined Dr. Bowen, as a missionary of the Baptist church, in Africa, and remained there some time, and then returned to this state, where he resided at or near Troy, Henry county. He taught school in South Alabama. Mrs. Jas. Thorngton, daughter of Chief Justice Chilton and wife of Col. Thorng-

ton, a distinguished lawyer, of Montgomery, Ala., told me he had taught in her father's family about the end of the civil war and taught her Latin. But after Prof. Beaumont went to South Alabama, I did not meet him again, though we continued to correspond. He was a good man and a good citizen and a sincere and pure Christian, but not much of a creedist. He loved science, in all its vast field, with the zeal and fidelity of an enthusiast, and his death was a real loss to our science.

NEW LITERATURE.

BY W. A. KELLERMAN.

"BRITISH SPHÆROPEIDÆ, — SPECIES HITHERTO FOUND IN THE BRITISH ISLANDS." By M. C. Cooke, *Grevillea*, June, 1886.

"FUNGI OF NEW GUINEA." By M. C. Cooke. l. c.

"FUNGI-HUNTING IN SPRING, II." By W. B. Grove, B. A. *Midland Naturalist*, June, 1886.

"STUDIES ON THE CONTAGIOUS (BACTERIAL) DISEASES OF INSECTS." By S. A. Forbes. *Bulletin Illinois State Laboratory of Natural History*, Vol. II, article IV.

"CUCURBITARIA LABURNI AUF CYTISUS LABURNUM." Von Dr. Karl Freiherrn von Tubeuf. *Botanisches Centralblatt*, No. 21-4, 1886.

"HOW TO COLLECT CERTAIN PLANTS." By A. P. Morgan, Chas. H. Peck, H. W. Ravenel, A. B. Seymour, E. W. D. Holway, William Trelease, W. G. Farlow, and others. *Botanical Gazette*, June, 1886.

In the several articles under the above heading, directions for collecting and preserving fleshy fungi, as Hymenomycetes, etc., are given by Messrs. Morgan, Peck and Ravenel; Parasitic Fungi, Uredineæ, etc., by Messrs. Seymour and Holway; Bacteria, Schizomycetes, by Prof. Trelease; Yeast, Saccharomycetes, by Dr. Farlow.

"FUNGI EXOTICA, III." Von Dr. Georg Winter. *Hedwigia*, Maerz bis Juni, 1886.

In this article are described twenty-eight new species, collected by Mr. Moller, inspector of the botanical garden at Cornibra. Among them are three species of *Asterina* and ten species of *Meliola*. Dr. Winter is at present working up, monographically, these two genera, examining "in den *original* exemplaren," figuring and describing fully all the species known. The new genus described is as follows:

MOLLERIELLA, Winter, n. gen.—Apothecia superficialia, membranacea, minutissima, e basi sterili bulbosa, peritheciiformi et hymenophora convexo, hemispherico-companuliformi formata. Hymenophorum ascos numerosos, inordinate conglobatos, hyphis sterilibus, tenuissimus intermixtos, globosos gerens, epithecio crasso, celluloso, fusco obtectum. Sporæ oblongæ, transverse pluriseptatæ, hyalinæ.

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No. 8.

THE BANDED-SPORE TRICHIAS.

BY GEO. A. REX, M. D., PHILADELPHIA, PA.

Of the three Trichias, *Tr. chrysosperma*, Bull., *Tr. affinis*, De By., and *Tr. Jackii*, Rostfki., characterized by reticulated or banded spores, the first is the only one as yet recorded as an American species. While it is undoubtedly our common form, plants answering the descriptions of the other two species, except in one important particular, are not rare. The chief points of specific difference between these three species are found in the markings of the spores and elaters, or threads, and may be summarized from the description of Rostafinski as follows :

“ The spores of all are globose and provided with external ridges or thickened bands of varying shape raised upon the surface of the spores.”

In *Trichia chrysosperma*, these ridges are uniform in width, forming a network of polygonal meshes, each ridge being of greater height than width. In *Tr. affinis* and *Tr. Jackii*, the ridges are of greater width than height, and are fitted with cylindrical, well-like openings perpendicular to the surface of the spore, which pits are characteristic of these two species only. The spore bands of *Tr. affinis* are not uniform in width and form a network of irregular meshes provided with a single row of pits in the median line of the bands. The spore bands of *Tr. Jackii* either branch irregularly, or form an irregular net, or appear as an irregular spot with a wavy outline, all, however, sometimes in the same spore. These bands are sufficiently wide to give space for a clump, or two or more rows of pits. Again, the elaters of *Tr. chrysosperma* are usually 8.3 mic. m. wide, exceptionally only five mic. m., with from 3—5 spirals, and, connecting each two adjoining spirals, there are thin ridges or veins, parallel to the axis of the elater, as long only as the interspiral spaces. The elaters of *Tr. affinis* are non-spinulose, 4.15 mic. m. wide, with from 3—5 spirals, and the interspiral ridges are wanting. The elaters of *Tr. Jackii* are 4.5 mic. m. wide, with from 3—4 spirals, which are studded with sharp spines sometimes 2 mic. m. in length. The interspaces between the spirals are wider and the interspiral ridges are also wanting. In the summary, only the microscopical features are given.

The following analysis of the results of the examination of a large number of specimens of *Trichia*, obtained from widely separated localities by personal collection or from correspondents, shows some interesting and unexpected facts, and permits conclusions to be drawn which may necessitate a revising of specific lines. By far the larger number of specimens examined were, undoubtedly, *Tr. chrysosperma*, Bull., and as they, with two exceptions, differ in no respect from the typical description, I have omitted them from the list :

1. West Fairmount Park, Philadelphia, Pa. Spores distinctly of the *Tr. Jackii* type with bands pitted, irregularly branched and zigzag in outline ; elaters spinulose, 4.5 mic. m. wide ; interspiral ridges present, but few in number, irregular and indistinct.

2. Fairmount Park, Philadelphia, Pa. Spores of the *Tr. Jackii* type ; elaters spinulose, 4.5 mic. m. wide ; interspiral ridges present and distinct.

3. Fairmount Park, Philadelphia, Pa. Spores of the *Tr. Jackii* type ; elaters very spinulose, 4.5 mic. m. wide ; interspiral ridges present and very distinct.

4. Fairmount Park, Philadelphia, Pa. Spores of the *Tr. affinis* type principally, with a small proportion of *Tr. Jackii* spores ; elaters spinulose with short spines, 4.5 mic. m. wide ; interspiral ridges present, but not all parallel to axis of elater, some connecting with the adjacent spirals at acute angles.

5. Fairmount Park, Philadelphia, Pa. Spores of the *Tr. Jackii* type ; elaters spinulose, 4.5 mic. m. wide ; interspiral ridges present but indistinct.

6. Chestnut Hill, Philadelphia, Pa. Spores distinctly of *Tr. affinis* type ; elaters slightly spinulose, 4.5 mic. m. wide ; interspiral ridges present.

7. Gray's Ferry, Philadelphia, Pa. Spores with broad bands, in a polygonal mesh, with only a single row of pits ; elaters 4.5 mic. m. wide, spinulose, spines 1.5 mic. m. long and broad interspaces between spirals ; interspiral ridges present and distinct.

8. East Park, Philadelphia, Pa. Spores of *Tr. affinis* type, with some *Tr. Jackii* spores ; elaters 4.5 mic. m. wide ; spinulose with spines 1.5 mic. m. long ; broad interspaces between spirals and interspiral ridges present and distinct.

9. Fairmount Park, Philadelphia, Pa. (L. Thomas) ; spores distinctly of *Tr. affinis* type, but the bands with broken or interrupted meshes ; elaters 4.5 mic. m. wide and spinulose, ends of elaters long and thin ; interspiral ridges present and distinct.

10. Thousand Isles, St. Lawrence river. Spores of both *Tr. affinis* and *Tr. Jackii* types, the former somewhat in excess ; elaters spinulose, 4.5 mic. m. wide ; interspiral ridges present and very distinct.

11. Newfield, N. J. (J. B. Ellis). Spores distinctly of *Tr. affinis* type, occasionally varying to the *Tr. Jackii* type ; elaters spinulose, 4.5 mic. m. wide ; interspiral ridges present and very distinct.

12. Iowa (E. W. Holway). Spores equally of the *Tr. affinis* and *Tr. Jackii* types; elaters 4.5 to 5 mic. m. wide, minutely spinulose and the interspiral ridges very distinct.

13. Ohio (A. P. Morgan). Spores largely of *Tr. chrysosperma* type, with shallow, irregularly-meshed ridges, the balance passing into a *Tr. affinis* type, with few or many pits, as the width of the bands will permit; elaters 6 mic. m. wide, irregularly spinulose and the interspiral ridges large and distinct.

14. Adirondack Mts., N. Y. Spores typical of *Tr. chrysosperma*; elaters 7.5 mic. m. wide, minutely but densely spinulose, elater ends various, sometimes terminating with a short point, or bluntly without a point but bristling with the ends of the spirals, or with a very long, slender, smooth end three or four times the length of the diameter of the elater; interspiral ridges very numerous, crowded close together and irregular, not all parallel to the axis of the elater.

Of these specimens, Nos. 13 and 14 are varieties of *Tr. chrysosperma*, Bull., No. 13 being a transitional form. All of the other numbers have, in the same sporangia, the pitted, banded spores characteristic of *Tr. affinis* and *Tr. Jackii* only, and elaters with the interspiral ridges characteristic of *Tr. chrysosperma* only. Other irregularities are also noticeable. In Nos. 4, 6 and 9, with spores of a pronounced *Tr. affinis* type, we have spinulose elaters, a characteristic of *Tr. Jackii*, and in Nos. 7 and 8, also with spores of a *Tr. affinis* type, we have in the elaters the broad interspiral spaces belonging to *Tr. Jackii*. With such discrepancies in leading specific characteristics, I can only refer my specimens to *Tr. affinis*, De By., and *Tr. Jackii*, Rfki., provisionally, as I have not been able to obtain authenticated specimens of these species for comparison. The examination was made with a one-sixteenth Zeiss immersion objective, which showed clearly and positively all the points noted. The external appearance of the sporangia of these *Trichias* is sufficiently different to enable one, with a little experience, to separate readily the pitted spore species from *Tr. chrysosperma*. The former cannot be distinguished from each other, without the aid of the microscope, with any degree of certainty.

NEW SPECIES OF FUNGI FROM VARIOUS LOCALITIES.

BY J. B. ELLIS AND B. M. EVERHART.

A large proportion of the species here described were collected by the Rev. A. B. Langlois, in Louisiana, mostly in Plaquemines county, not far from Baton Rouge.

DACRYMYCES CORTICIOIDES, E. & E., var. CANIGENA.—On scales of pine cones (*P. rigida*), Newfield, N. J., May, 1886. Orbicular, about 1 millim. diam., flattish, convex, centrally attached, pale yellow,

margin slightly pubescent, soon confluent; sporophores at first cylindrical $75-80 \times 3-4 \mu$, at length branching above and bearing globose bodies (the true sporophores?) $7-8 \mu$ in diam., attached, two or three together, in an imperfectly racemose manner, both lateral and terminal. Many of the erect threads remain sterile and resemble the paraphyses of a *Peziza*. A re-examination of the specimens published in Vol. I, p. 149, of this JOURNAL, and distributed in N. A. F., No. 1587, shows, though less distinctly, the presence of the globose bodies just mentioned, and these should, perhaps, be considered as the true sporophores.

PEZIZA (TAPESIA) HETEROMORPHA, E. & E.—On the base of culms of the *Spartina polystachya*. May. Langlois, No. 458. Subiculum brown-black, forming a felt-like coat extending for some inches along the culm and consisting of densely matted hyphæ; receptacles scattered, globose at first, with a small, round opening with a white margin and pallid-white disk (hymenium), at length expanding to nearly plane or even slightly convex, with margin subundulate and disk flesh colored, 2—3 millim. diam.; asci clavate-cylindrical, about $70 \times 6-7 \mu$, with abundant paraphyses; sporidia eight in an ascus, fusoid-cylindrical, slightly curved, hyaline, 3—4-nucleate, with endochrome at length three times divided (pseudo-septate), about $20 \times 2\frac{1}{2}-3 \mu$. The young receptacles are clothed with whitish, spreading hairs.

COSCINARIA, Ell. & Everhart, nov. gen.—Perithecia membranaceous, multi-perforate above; asci and sporidia (in the single species known) linear. The genus pertains to the *Pyrenomyces*.

C. LANGLOISII, E. & E.—On dead stems of *Vigna luteola*. June, 1886. Langlois, No. 487. Perithecia tuberculiform, erumpent, soft, $\frac{1}{3}-\frac{1}{2}$ millim. in diam., pale flesh-color or horn-color when fresh, becoming nearly black when dry, surrounded by the ruptured epidermis, of cellular-fibrose structure, convex or nearly plane above and pierced with 25—30 small, round holes (ostiola); asci linear, $150-200 \times 5 \mu$; paraphyses (?); sporidia filiform, multinucleate, nearly as long as the asci and 1μ thick, nearly hyaline. The perithecia sometimes fall out and leave little pits where they stood. They resemble, outwardly, a small *Tubercularia*.

HYPOXYLON BICOLOR, E. & E.—On dead limbs of *Quercus virens*. Langlois, No. 344. Stroma tubercular-hemispheric, about 2 millim. across, surface slightly even from the subjacent perithecia and punctate from their ostiola almost as in *H. punctulatum*, B. & Rav., color dull reddish or purplish outside and light yellow within; perithecia subperipheric, closely packed, about $\frac{1}{4}$ millim. in diam.; asci narrow cylindrical with a slender base, about $100 \times 6 \mu$; sporidia in a single series, subnavicular or narrow elliptical and subinequilateral, pale yellowish at first, then opaque, 1—2 nucleate, $9-12 \times 3\frac{1}{2}-4\frac{1}{2} \mu$, ends subacute. Closely allied to *H. fuscum*, Pers., from which it differs but little outwardly, but the stroma, yellow inside, will distinguish it.

DIATRYPE COMPTONIÆ, E. & E.—On dead, partially decorticated stems of *Comptonia asplenifolia*, Newfield, N. J., May, 1886. Stroma erumpent, subtuberculiform, small (1—3 millim.), subhemispheric or elongated, dull black outside, whitish within and consisting of the scarcely altered substance of the wood; perithecia often single in the smaller stromata, or in the larger and more elongated ones 2—12, with thick walls, ovate or subangular from mutual pressure, $\frac{1}{4}$ — $\frac{1}{2}$ millim. in diam., contracted above into a short neck, with a short, cylindrical or subconic, slightly projecting, smooth ostiolum; asci clavate, 75—85 μ long, including the slender, stipitate base, surrounded with abundant paraphyses and containing eight subfusoid, yellowish-brown, 3-septate, slightly curved, 12—15 x 4—5 μ sporidia, which are crowded into the upper half. The general appearance is much like that of *D. quercina*, Fr., var. *lignicola*, C. & E. The ostiola are not sulcate and have a smooth, round opening. The stromata arise either directly from the wood or are seated on the lower stratum of the bark denuded by the flaking off of the superficial layer.

(To be continued.)

NOTES ON FLORIDA FUNGI.--No. 7.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

THE POLYPORI.

The following species, collected in Florida during the past winter, were studied and named by Mr. Ellis, and are the subject of the first complete paper by me in a series intended to embrace all the results of my investigations in that prolific field. Florida, projecting southward for four hundred miles and washed by the shores of two oceans, her climate tempered also by the Gulf stream, naturally offers superior and unique advantages to the naturalist which cannot be enjoyed in any other section of our country. From its geographical and subtropical position and close proximity to the West Indies, we may reasonably expect to find in the southern part of Florida a cryptogamic flora similar to that of those islands. This has proven true of her phænerogamic botany, and, so far as explored, no less so in the lower forms. Therefore we regard mycologic study in this field as more than usually interesting. Thus far the efforts of two or three others and of myself have been confined to a narrow strip of country adjacent to Jacksonville, which locality is *extra-limital* as regards the species of subtropical Florida, a region that fairly begins somewhat further south. We have, however, already found what may be called *waifs* from the Indies, and may expect to find in the southern half of the peninsula an exact counterpart of the adjacent Bahamian mycologic flora.

1. POLYPORUS GILVUS, Fr.—Very abundant on old logs and on standing decayed *Quercus laurifolia*. *P. scruposus*, Fr., is the same thing.
2. POLYPORUS ARCULARIUS, Fr.—Extremely abundant on dead fallen limbs.
3. POLYPORUS PERGAMENUS, Fr.—Very common with the preceding species.
4. POLYPORUS AUSTRALIS, Fr.—From Tampa. A tropical species, and not occurring northward so far as explored.
5. POLYPORUS SANGUINEUS, Fr.—Very common on decayed logs.
6. POLYPORUS LICNOIDES, Mont.—Found rarely near Jacksonville, on decayed *Quercus*. Tropical also.
7. POLYPORUS NIPHODES, B. & Br.—A beautiful white species, found on dead limbs of *Carya* exclusively.
8. POLYPORUS CARNEUS, Nees.—Very beautiful. Rare in decayed places on *Juniperus Virginiana*, in deep swamps. Also rare on *Pinus australis*.
9. POLYPORUS VIRGINEUS, Schw.—On decayed stump. Rare.
10. POLYPORUS HALESIÆ, B. & C.—On fallen limbs in damp places. Not common. Resembles *P. Salleanus*, Berk. Very beautifully colored in rose and lilac shades.
11. POLYPORUS PLEBEIUS, Berk.—A large and elegant species, found on decaying *Quercus laurifolia* and on *Carya*. Not common. Of a beautiful purplish color when fresh.
12. POLYPORUS HIRSUTUS, Fr.—A common and variable species. On old logs and dead limbs.
13. POLYPORUS VELUTINUS, Fr.—By many considered a variety of the preceding species. On dead *Magnolia*. Distinctly pileate.
14. POLYPORUS VERSICOLOR, Fr.—Resupinate; beautiful. Common on dead limbs.
15. POLYPORUS ADUSTUS, Schw.—Common. Collected specimens four feet long. On dead *Magnolia* logs.
16. POLYPORUS CHARTACEUS, B. & R.—A beautiful species. Not common. On dead limbs.
17. POLYPORUS ARGILLACEUS, Cke.—Rare on dead bark.
18. POLYPORUS OBLIQUUS, Fr.—Abundant on small, decayed limbs. Resembles *P. ferruginosus*.
19. POLYPORUS ABIETINUS, Fr.—On fallen pine limbs. Not common.
20. POLYPORUS CONTIGUUS, Fr.—Occasional on decayed logs.
21. POLYPORUS HYPOCOCINUS, B.—The rarest species found. One good specimen only.
22. POLYPORUS XANTHOLOMA, Schw.—On dead limbs of *Quercus nigra*.

23. *POLYPORUS ALABAMÆ*, B. & C.—A rare and beautiful species ; white. On a dead hickory limb.

24. *POLYPORUS CINNABARINUS*, Fr.—Only a few specimens found on a dead Magnolia log.

25. *POLYPORUS HEMILEUCUS*, B. & C.—Abundant on dead *Carya* and Magnolia. Very fine.

26. *POLYPORUS AMOEMUS*, B. & C.—Rather common on old logs.

27. *POLYPORUS SALMONICOLOR*, B. & C.—Not abundant. On fallen trees.

28. *POLYPORUS PURPUREUS*, Fr.—Very beautiful and very rare. Margins lilac color.

29. *POLYPORUS MOLLUSCUS*, Fr.—Pure white, with soft, velvety texture. Rare. On fallen limbs.

30. *POLYPORUS NITIDUS*, Fr.—Common on under side of fallen trees. Has been called *P. vulgaris*.

31. *POLYPORUS VAPORARIUS*, Fr.—Common. Name very appropriate, as the beautiful glistening color soon disappears.

32. *POLYPORUS IGNIARIUS*, Fr.—Occasional in decayed places on living *Quercus*.

33. *POLYPORUS TABACINUS*, Mont.—Abundant on old oak stump.

34. *POLYPORUS LACTEUS*, Fr.—On dead fallen limbs. Not common.

35. *POLYPORUS ECTYPUS*, B. & Rav.—Rare. Found on a small oak stump in a swamp. Very fine.

ELIAS MAGNUS FRIES.

BY WM. R. DUDLEY, CORNELL UNIVERSITY.

ELIAS MAGNUS FRIES was born at Femsjö, Sweden, Aug. 15th, 1794, and died at Upsala, Sweden, Feb. 8th, 1878. Although he had but comparatively little to do, directly, with the fungi of America, no catalogue of our higher fungi can be published but does not show his name as author of a very large number of species which are found here as well as in Europe. He is regarded as the founder of the systematic literature, in a true sense, in that branch of botany. Therefore, as Linnæus and his writings must form a part of every nation's history of its botany, so Elias Fries, another great Swedish botanist,—and next to Linnæus the greatest,—must enter into the history of cryptogamic botany, especially of fungi, wherever and whenever that subject is historically considered.

Fries' career may be said to have been a century later than that of the great baron's ; for, although he was born about thirteen years less than a century after the birth of Linnæus, his life was prolonged till Feb. 8th, 1878, or one month after the centennary of the death of his great prototype. There is a curious parallelism extending throughout the whole career of these two men. Both were sons of country clergy-

men, and born in Smaland, in the southern part of Sweden. Both, as lads, attended the school at Wexio, and both entered the University of Lund, although Linnæus remained there only one year, finally taking his degree at Upsala, while Fries graduated at Lund. Both held for many years, as the crowning position of long and distinguished university careers, the professorship of Botany at Upsala, the most famous of the Swedish universities, where each died greatly beloved and honored. They were both voluminous in their authorship,—indeed, they have few parallels, in this respect, in botany,—and the period covered by the work of each also fairly represents the comparative difference in time in development of phænogamic and cryptogamic botany. It has been said, furthermore, that Fries was almost the last of that generation whose knowledge extended over all branches of the science as it was then understood and whose names were considered as authorities in all.

Apparently the life of Fries was marked by no great privations or hardships. The way to his career opened most alluringly even from his boyhood. His father was a zealous and even accomplished botanist, and, as the boy had no brothers or sisters, or even young playmates, his father early led him into a very close acquaintanceship with nature, and made for him friends of the little wild flowers which grew among the wooded hills of Smaland,—“Friends who did not afterwards desert him, but were always true,” as he says many years after. He also says that his interest in fungi began when he was twelve years old by the discovery of the beautiful *Hydnum coralloides* one day, when out in the woods and fields with his mother. Few fungi had been described at that time, and the next day, in attempting to determine his *Hydnum*, he learned in a short time the characters of all the genera described in his “Flora.” When he was fourteen, during the turmoil of the Napoleonic wars, his school at Wexio was closed and he renewed his observations on fungi with the greatest ardor, describing and giving temporary names to those he found. He continued this till 1811, when he left his gymnasium to enter the University of Lund, at which time he had learned to distinguish between three and four hundred species of these plants. At the university he found eminent men of science, among whom was the elder Agardh, then a young man of twenty-six, and who was yet to make his fame as an algologist. Every one showed great kindness to the bright and enthusiastic boy, but he found his greatest delight in the library and its treasures of botanical works. Here he poured over the volumes of Persoon and Albertini, probably also over the *CONSPECTUS FUNGORUM* of Albertini and our own Schweinitz. Here, also, were the earlier volumes of the classic *FLORA DANICA*, begun thirty years before the birth of Fries, and whose completion he did not live to see. Beside the illustrations of the latter work, there were those of Buxbaum and Persoon, and we can imagine how his imagination kindled toward future work as he here recognized many of his old friends of the Smaland woods, such as he had previously described. The three years of his university life passed quickly away, but he maintained an excellent standing, although

he was industriously collecting and working on his fungi. In 1814, he took his degree at Lund, and was immediately nominated "Docens" of botany in that university. His first publication, begun during that year, seems to have been in phænogamic botany, and was entitled, *NOVITIÆ FLORÆ SUECIÆ*. But in 1815 he published the first part of *OBSERVATIONES MYCOLOGICÆ*, based chiefly on collections made during his university course, the second volume appearing in 1818. He was preparing other papers at the same time on both phænogamic and cryptogamic plants. His keenly-discriminating mind soon saw that the classification previously established for the lower plants was exceedingly defective. He therefore began, when he was not yet twenty-two, a systematic review of all the fungi known to him. The result was more extended and accurate descriptions of species, based on the morphology of the parts, taking into account, also, the life and development of the fungus, wherever that was possible. In theory, his new system of classification also was thoroughly scientific and in line with the most advanced views of the day in regard to systematic botany. It was hailed by all lovers of the subject as the true basis for the scientific study of the lower plants. The publication of this work was begun, it must be remembered, twelve years before the compound microscope was brought into use. Notwithstanding the cordial reception of his new system and his recent work, the indomitable spirit of Fries did not rest satisfied; in 1829, therefore, having completed his first great work on fungi, *SYSTEMA MYCOLOGICUM*, in three volumes, he again revised all his species and descriptions with great care, to test the value of his theoretic conclusions. As he had now begun to pay more especial attention to the *Hymenomycetes*, a third careful survey of this group resulted in his *EPICRISIS SYSTEMATIS MYCOLOGICI, SEU SYNOPSIS HYMENOMYCETUM*, published in 1836-38. In 1844, the Royal Academy of Science, at Stockholm, proposed to bear the expense of a series of colored engravings of all the higher fungi, to be made by or under the supervision of Professor Fries. For this work he again went over all the material obtainable, and the first series of these elaborate figures was published between 1867 and 1875, consisting of 100 folio plates, and entitled, *ICONES SELECTÆ HYMENOMYCETUM NONDUM DELINEATORUM*. At the time of his death, a large number of additional plates had accumulated, and a second similar series, under the same title and of the same number of plates, was issued between 1878 and 1884, edited by his sons. These are estimated to contain nearly 1,700 figures. A second edition of his *HYMENOMYCETES* was issued in 1874, the preface written on his eighty-first birthday. Two other works on fungi might be mentioned as important among his larger publications, viz.: *MONOGRAPHIA HYMENOMYCETUM SUECIÆ*, 1851-63, in two volumes 8vo. and *FUNGI ESCULENTI ET VENENATI SCANDINAVIÆ*, 1862-69, with ninety-three folio plates.

In other fields of botanical science, he has been indefatigable. After holding the adjunct professorship of Botany at Lund for many years, he was called to the chair of Practical Economy at Upsala in 1834.

This, together with the many papers on economic botany and agriculture bearing his name, testify to the esteem with which he was held in practical affairs. It was not many years, however, before he was promoted to the professorship of Botany at Upsala, the chair once held by Linnæus.

In the botany of higher plants, he was a recognized authority till the last, and is the author, in this branch, of ten or twelve works of considerable extent, bearing a variety of titles. These include "Floras" of the whole or parts of Sweden. His papers and schemes embodying his theories of the principles of classification in phænogamic botany deserve a passing notice, as they contain suggestions original with him, and not only attracted attention when they were put forth, but have been utilized, to a considerable extent, by several modern systematists.

In lichenology, also, he was a very active worker during his younger days, but his writing in that field might be said to have culminated as long ago as 1831, when he published his *LICHENOGRAPHIA EUROPEÆA REFORMATA*, regarded for many years as a standard authority on the subject. He also issued fascicles of herbarium specimens of lichens, which are of the highest value.

Finally, beside the larger works, some of which have been mentioned, the Royal Society catalogue, Vol. III and Vol. VII, enumerate the titles of eighty-five lesser papers published by him down to 1873, covering the widest variety of topics in botanical science, and scattered through various periodical publications. This almost unparalleled activity continued to the last. Dr. Lundstrom, of Upsala, says of him that, a week before his death, he completed an essay for a foreign periodical; and, even as his latest hours approached, he reviewed with unclouded mind and critical interest an English publication which had just come to hand, saying that "England has more numerous and more remarkable *Discomycetes* than Sweden, but as regards *Hymenomycetes*, we take by far the lead." Endowed with a vigorous constitution, fortunate in the mental atmosphere in which he was born and reared, fortunate in experiencing no painful delays in beginning his favorite study and no lack of appreciation in their continuance, he was happily free, in his latest hours, from the clouds which settled over the mind of his great predecessor at Upsala. The most interesting portrait of him extant is the last one taken, showing long, white locks escaping from beneath the scholar's cap; and what a delightful, even handsome face had this octogenarian! So well has enthusiasm and singleness of heart preserved the charming characteristics of youth in the keen eye, the kindly but resolute mouth, and the simplicity of character everywhere expressed, that it is not difficult to imagine the boy of twelve on the threshold of a career that was to be both happy and distinguished. This noble man, full of inspiring enthusiasm, is said to have always shown to the younger generation that kindness and encouragement which only the leaders in a science know how to give. Certainly there is much in his portraits that would promise support to such a claim.

NEW LITERATURE.

BY W. A. KELLERMAN.

"KRYPTOGENEN FLORA VON DEUTSCHLAND, OESTERREICH UND DER SCHWEIZ. PILZE." 23 Lieferung. *Pyrenomyces* (*Sphaeriaceae*). Von Dr. G. Winter.

This part includes pp. 593-656 of Vol. II. Besides the diagnoses and illustrative figures of *Diaporthe*, *Mamiana*, *Valsa*, *Anthostoma*, *Rhynchosoma* and *Kalmusia*, it includes descriptions of 105 species of *Diaporthe*, and more to follow, as this is one of the largest genera of the *Pyrenomyces*. This, like the preceding, is heartily welcomed on account of its high character and of its value to American mycologists.

"LE GLYCOGENE CHEZ LES BASIDIOMYCETES." Rapport de M. Gilkinet, troisieme commissaire. Revue Mycologique, Juillet, 1886.

"SPHÆROPSIDEEES NOUVELLES, RARES OU CRITIQUEES RECOLTEES AUX ENVIRONS DE SAINTES (CHARENTE-INFERIEURE). Par M. Brunard. 1. c.

"UNE NOUVELLE ESPECE DE GASTEROMYCETES, TULOSTOMA JOURDANI." Par M. N. Patouillard. 1. c.

"FUNGI GALlici EXSICCATI : CENTURIE XXXVIIIe." C. Roumeguere.

"SUR LE DEVELOPPEMENT ACROGENE DES CORPS REPRODUCTEURS DES CHAMPIGNONS." Par M. J. de Seynes. 1. c.

"DIAGNOSES DE TROIS ESPECES NOUVELLES D'ASCOMYCETES COPROPHILES." Par E. Marchal. 1. c.

"LE PERONOSPORA VITICOLA DANS LES VOSGES." A. d'Arbois de Jubainville. 1. c.

"WOODS AND THEIR DESTRUCTIVE FUNGI." By P. H. Dudley, C. E. *Popular Science Monthly*, August, 1886.

"SACCARDO'S SYLLOGE, VOL. IV," is now published. It is devoted to the *Hyphomyces*, and will prove a valuable aid to those engaged in the study of these perplexing productions. The principle of classification is the same as in the preceding volumes, and in its application here, as in Vol. III, is, perhaps, as satisfactory as any that can be devised. Three thousand five hundred and eighty-three species are enumerated, included in 113 genera. The next volume, which will be devoted to the *Hymenomyces*, is expected to be ready about the end of this year. Copious additions to Vols. I-IV are also being made. E.

"LINHART'S HUNGARIAN FUNGI." Of this valuable collection, five centuries have now been issued. The specimens are mostly satisfactory, and eighty-nine of the species are illustrated by good engravings. The collection is in book form (unbound), and, for a work so carefully prepared, the price, 12 marks per century, is very cheap. E.

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JOURNAL OF MYCOLOGY.

Vol. II. MANHATTAN, KANSAS, SEPTEMBER, 1886. No. 9.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 80.)

97. *NECTRIA CELASTRI*, Schw. Syn. N. Am., 1421.

“Stroma tuberculariform, pale yellowish within, becoming black outside, subpulvinate; perithecia densely cæspitose on the stroma, globose-ovate, corrugate-rugose; ostiola obsolete, but showing as a dark-brown speck, about the size of *S. cinnabarina*, easily falling from the stroma. The perithecia at length become indurated, but do not collapse.” Specimens of *Celastrus scandens*, collected in New York State by W. R. Gerard, agree well with the above-quoted characters, except in having the perithecia only one fifth or one sixth millim. in diam. and collapsed. We do not, however, consider this latter character in every case reliable, as it depends, in some measure, on the stage of growth at which the specimens are collected. In Gerard’s specimens, the stroma is not well shown, as it is already covered with and partially obliterated by the superimposed perithecia, which are of a bright red color at first, but at length dark red and collapsed, and have the surface subverrucose-roughened. The asci are cylindrical, 55—60 x 6 μ , or sometimes enlarged above to 8 or 10 μ thick; sporidia 1-seriate, elliptical, 1-septate, not constricted, 7—8 x 3½—4 μ . The groups of perithecia are about 1 millim. across. Notwithstanding the slight discrepancies, we are inclined to regard this as the species meant by Schweinitz, who found it rather rare on *Celastrus*, about Bethlehem, Pa. Peck, in 26th Report, also mentions it as found by him at Greenbush, N. Y., but he gives no description of his specimens and we have not seen them.

98. *NECTRIA MICROSPORA*, C. & E. Grev. V, p. 53.

Cæspitose, bursting out in groups of 3—10 through cracks in the bark; perithecia subglobose, orange-red, smooth, at length collapsing, one sixth to one fifth millim. in diam.; asci cylindrical, 50—60 x

5—6 μ ; sporidia elliptical, 2-nucleate, becoming 1-septate, hyaline, 6—7 x $3\frac{1}{2}$ —4 μ ; groups of perithecia $\frac{1}{2}$ —1 millim. across; stroma not conspicuous. On bark of *Magnolia glauca*, Newfield, N. J., July.

99. NECTRIA AUREOFULVA, C. & E. Grev. VII, p. 8.

With the same habit as the preceding species, but perithecia larger ($\frac{1}{4}$ millim.), subglobose, smooth, pale, golden-yellow, with the minute ostiolum darker; asci cylindrical, 50 x 6—7 μ ; sporidia biserial, oblong-fusoid, 8—12 x 3 μ , 2-nucleate, becoming tardily uniseptate; stroma pale, flattish, scarcely rising above the epidermis. On bark of *Magnolia glauca*. Autumn.

100. NECTRIA INFUSARIA, Ck. & Hark. Grev. XII, p. 101.

"Cæspitose, erumpent, pale red; perithecia few, oval, soft-waxy, subconfluent, smooth, glabrous, 5—10 on a stroma; asci cylindrical, 8-spored; sporidia uniseriate, elliptical, obtuse, uniseptate, not constricted, hyaline ('demum pallidis'), 10 x $4\frac{1}{2}$ μ ; conidia (*Fusarium Acaciæ*, Ck. & Hark.), either accompanying the perithecia on the same stroma or produced in separate pustules of earlier growth, on a pale red, pulvinate stroma, curved, hyaline, acute at each end, 3-septate, 30—40 x $2\frac{1}{2}$ μ . On *Acacia* twigs, California, (Harkness, Nos. 2162 and 2268), in a quadrisulcate manner as in many *Valsas*. Asci 45—55 x 10—12 μ , oblong-cylindrical, sessile; sporidia biserial, oblong-fusoid, hyaline, 3—4-nucleate, becoming uniseptate, 12—16 x 4—5 μ , sometimes constricted at the septum, but mostly not. Some of the perithecia are scattered and stand singly, but, in well-developed specimens, they form dense clusters 1— $1\frac{1}{2}$ millim. in diam." This description is taken from the specimens in N. A. F., 773, on *Benzoin*, collected in West Chester, Pa., and agrees fairly with that given by Schweinitz, except that the perithecia are not *polystichous* (lying in several layers), nor are they what would, in a general way, be called *smooth*. They are certainly not glabrous, nor are those of *N. coccinea*, Fr., which are called smooth, but are, at least when dry, distinctly furfuraceous, though not so decidedly so as in this case. Our friend, W. C. Stevenson, Jr., has, however, compared the specimens in N. A. F., 773, with an original specimen of *N. ochroleuca*, Schw., in Herb. Schw., in the Mus. of the Acad. Nat. Sci., at Philadelphia, and says that, outwardly, they appear to be the same, but he did not make a microscopical examination, as the specimen in the Acad. Herb. was very meager. Found, according to Schweinitz, on various deciduous trees, both at Salem, N. C., and Bethlehem, Pa.

101. NECTRIA ATROFUSCA, Schw. Syn. N. Am., 1429.

Stroma pulvinate, subcarnose, wood-color inside, darker outside, small ($\frac{1}{2}$ millim. or about that), erumpent through the epidermis, by the ruptured margin of which it is closely embraced; perithecia cæspitose, nearly black, smooth and glabrous, small, mostly less than one sixth millim., conic, becoming ovate and obovate, and finally collapsing above; ostiolum obtuse-conic, black and shining, rather large; asci subcylindrical, 45—55 x 7 μ , with abundant, imperfectly-developed paraphyses; sporidia subbiserial, oblong-elliptical, lower cell

sometimes a little narrower, uniseptate, hyaline, $10-12 \times 4\frac{1}{2} \mu$. On dead stems of *Staphylea trifolia*, Bethlehem, Pa. (Schweinitz), West Chester, Pa. (Everhart). The foregoing description is from specimens distributed in N. A. F., 1547, which agree with specimens in Herb. Schw. The groups of perithecia are often arranged in a subseriate manner, are about 1 millim. in diam, and, with the stroma to which they are attached, are finally deciduous.

102. *NECTRIA NIGRESCENS*, Cke. Grev. VII, p. 50.

"Cæspitose, red, at length turning black, glabrous; ostiolum papilliform; asci cylindrical; sporidia elongated-elliptical, uniseptate, $18 \times 6 \mu$; stylospores on (the same) stroma, some ovate, brown, $5 \times 3 \mu$, others linear, $6 \times 2 \mu$, hyaline. On *Gleditschia*, Aiken, So. Ca. (2564)."

(To be continued.)

NEW SPECIES OF FUNGI FROM VARIOUS LOCALITIES.

BY J. B. ELLIS AND B. M. EVERHART.

DIATRYPELLA HYSTERIOIDES, E. & E.—On a decorticated poplar limb in a willow jungle. Louisiana. Langlois, No. 380. Stroma erumpent, tuberculiform, prismatic, often deeply quadrisulcate and subcornute, $\frac{1}{2}-1$ millim. in diam., yellow inside (about the same shade of yellow as in *Hypoxylon Sassafras*, Schw.), often elongated, hysteriiform ($1\frac{1}{2}-2$ millim. long), with a longitudinal furrow above like a *Hysterium*; perithecia 2—6 in a stroma, $\frac{1}{8}-\frac{1}{2}$ millim. in diam., with thick, black, coriaceous walls, narrowed above into a short neck, the apex of which is visible on the surface of the stroma as a small, papilliform or sometimes conic ostiolum; asci clavate-cylindrical, with a slender base, $100-115 \times 10-12 \mu$ (spore-bearing part $75-80 \mu$), filled with a multitude of allantoid, yellowish, 2-nucleate, $6-7 \times 1\frac{1}{2} \mu$ sporidia. The species is well characterized by its peculiar stroma. The color of the young stroma is much deeper orange-red, but the color finally disappears.

LOPHIOSTOMA HETEROSTOMUM, E. & E.—On an oak barrel bottom. June. Langlois, No. 478. Perithecia erumpent, scattered or subgregarious, $\frac{1}{2}-\frac{3}{4}$ millim. in diam., depressed, spherical, the lower half sunk in the wood, the upper half emerging; ostiolum large, compressed, extending at first nearly or quite across the perithecium, at length deciduous, leaving the perithecium pierced above with a small, round opening; asci clavate-cylindrical, rounded above and contracted below into a slender, stipe-like base, $70-80 \times 6-7 \mu$, surrounded with abundant, rather stout paraphyses and containing eight fusoid, 1-septate, hyaline, slightly curved, appendiculate sporidia, $18-20 \times 4\frac{1}{2}-5 \mu$, 3—4 nucleate at first, but the nuclei and stout, $8-10 \mu$ long, hyaline appendages at length disappear, and the sporidia become constricted in the middle with the

ends rounded (fusoid-oblong), often with a distinct yellow-brown shade. The wood just below the surface assumes a uniform purplish-red color. This might, perhaps, be considered a var. of *Lophiostoma pulveraceum*, Sacc., but differs in the stained matrix, larger perithecia and deciduous ostiola.

LOPHIOSTOMA SUBCOLLAPSA, E. & E.—On outer bark of living *Nyssa multiflora*, Newfield, N. J. June, 1886. Perithecia cartilagino-membranaceous, black, globose, $\frac{3}{4}$ —1 millim. in diam., buried in the substance of bark, the epidermis slightly elevated and blackened over them and pierced by the papilliform ostium, which finally collapses; asci clavate-cylindrical, about $150 \times 12 \mu$, with abundant paraphyses; sporidia obliquely 1-seriate or more or less distinctly biseriate above, oblong-elliptical, $20\text{--}26 \times 8\text{--}10 \mu$ or regularly elliptical, $20\text{--}22 \times 12\text{--}15 \mu$, hyaline at first becoming brown and 3—7-septate, but not constricted at the septa. The sporidia are sometimes a little curved, or at least more prominent on one side. Apparently allied to *L. obtectum*, Pk., and approaching *Massaria*. The ostium is quite inconspicuous and only slightly prominent. Sometimes one or two of the cells of the sporidia is divided by a longitudinal septum.

DIAPORTHE KELLERMANNIANA, Winter.—On decaying culms of *Zea Mays*. June. Langlois, 494. Stroma extending continuously for several inches, or in narrow strips and irregular patches, circumscribed by a black line and surface of the matrix also blackened; perithecia scattered or subcæspitose, sunk in the substance of the culm, $\frac{1}{4}$ — $\frac{1}{2}$ millim. in diam., their long (1 millim.), rather crooked black ostiola projecting; asci lanceolate, about $40 \times 7\text{--}8 \mu$; sporidia biseriate, oblong-fusoid, 4-nucleate and yellowish, becoming constricted and uniseptate, ends rather obtusely pointed, $7\text{--}10 \times 3 \mu$.

In the published description of this species in Bull. Torr. Bot. Club, X, p. 49. There is nothing said of any ostium, and there is said to be no stroma ("stroma nullum"), but we believe this is, nevertheless, the species there meant.

SPHÆRIA (ZIGNELLA) SUBVESTITA, E. & E.—On dry, bleached roots of *Vaccinium*, Newfield, N. J., May, 1886. Perithecia seated on the bare wood or on the bark, with the base sunk in the matrix, ovate-conic, one sixth to one fourth millim. in diam. and one half millim. or more high, black, rough, except the smooth, sub-shining, short-cylindrical or sub-conical, broadly perforated, sub-truncate ostium; asci clavate-cylindrical, $50 \times 6\text{--}7 \mu$, with filiform paraphyses and a slender, stipitate base; sporidia fusiform, yellowish-hyaline, slightly curved, 3-septate and constricted slightly at the middle septum, $12\text{--}15 \times 2\frac{1}{2}\text{--}3 \mu$, crowded-biseriate. The sporidia are much the same as in *Sphaeria Hendersoni*, Ell., except in having the ends slightly curved, but in that species the perithecia are depressed and subcuticular and subastomous. *Melanomma conica*, Fekl., has much larger sporidia ($28 \times 4 \mu$).

DIDYMELLA PROMINENS, E. & E.—On dead herbaceous stems of *Ambrosia trifida*. Langlois, No. 336. Perithecia erumpent-superficial, scattered, ovate-hemispheric, $\frac{1}{4}$ millim. in diam., black, rough, except the prominent, tubercular-conic or short-cylindrical ostiolum; asci clavate-cylindrical, sessile, $40-45 \times 6-7 \mu$, with filiform paraphyses and eight subfusoid or subcymbiform, 1-septate, hyaline sporidia, $10-12 \times 3-4 \mu$, slightly constricted at the septum.

DIAPORTHE GLADIOLI, E. & E.—On dead stems of *Gladiolus*, Louisiana, February, 1886. Langlois, No. 390. Perithecia sunk in the substance of the stem just below the epidermis, which is blackened above them, forming elliptical, definitely limited spots 2—3 millim. long or, by confluence, 1 cm. or more; perithecia about $\frac{1}{4}$ millim. in diam., few, often only one or two in a spot, sometimes 6—8; asci (spore-bearing part) about $40 \times 6-7 \mu$, with a substipitate base; sporidia biserial, subfusoid, $7-10 \times 2\frac{1}{2} \mu$, 2-nucleate, becoming 1-septate, hyaline. The ostiolar project like slender, black bristles about 1 millim. long, but are easily broken off. This is very different from *Sphærella minimæpuncta*, Ck., also on *Gladiolus*.

SPHÆRELLA SAPINDI, E. & E.—On living leaves of *Sapindus marginatus*, Missouri, July, 1886. B. T. Galloway. Perithecia epiphyllous, globose, prominent ($\frac{1}{8}$ millim.), scattered, on roundish, definitely margined, white spots, 3—4 millim. in diam.; asci oblong-cylindrical, $60 \times 12 \mu$; sporidia biserial, subelliptical (a little narrower at one end), 1-septate and slightly constricted, $16 \times 4 \mu$. The conidial stage is a macrosporium on the same spots, with long, stipitate conidia and slender, septate hyphæ.

SPHÆRELLA SABALIGENA, E. & E.—On dead tips of leaves of *Sabal Palmetto*, April, 1886. Langlois, No. 426. Perithecia gregarious, $100-125 \mu$ in diam., covered by the cinereous cuticle, which is scarcely ruptured, over them; asci subovate. $22-25 \times 12-15 \mu$; sporidia crowded, oblong-clavate, 1-septate, constricted at the septum, subhyaline, $10-12 \times 3\frac{1}{2}-4 \mu$.

SPHÆRELLA SUBCONGREGATA, E. & E.—On peduncles of *Erigeron salsuginosus*, Mt. Paddo, Wash. Terr., alt., 6,000 to 7,000 ft., August, 1885. W. N. Suksdorf, No. 234. Perithecia gregarious or occasionally 3—6 collected in a cluster, erumpent and subsuperficial, ovate-globose, about $\frac{1}{4}$ millim. in diam., ostiolum acute; asci oblong, $40-45 \times 12-15 \mu$, without paraphyses; sporidia biserial, oblong-cylindrical or clavate-oblong, subhyaline (yellowish), $18-23 \times 3-4 \mu$, or, in the clavate form, $4-5 \mu$ wide. *Pleospora permunda*, Ck., which appears to be common in the Rocky Mt. region, occurred on the same stem.

SPHÆRELLA SMILACINA, E. & E.—On dead stems of *Smilax*, Newfield, N. J., May, 1886. Scattered, depressed, globose, one sixth millim. in diam., covered by the cuticle, which is blackened directly over the perithecia and barely pierced by the minute ostiolum; asci oblong, sessile, about $35 \times 7 \mu$; sporidia biserial or crowded, hyaline, fusiform-oblong or clavate-oblong, 1-septate, $9-11 \times 2\frac{1}{2} \mu$; perithecia entirely similar to the ascigerous perithecia, only a little more prominent and mostly on bleached stems, contain stylospores, oblong or elliptical-oblong, hyaline, 2-nucleate, 1-septate and slightly constricted, $7-8 \times 3-3\frac{1}{2} \mu$. *Diplodina Smilacis*, E. & E.

SPHÆRELLA GRANULATA, E. & E.—On dead stems of *Baptisia tinctoria*, with *Sphærella baptisiæcola*, Ck., Newfield, N. J., April, 1886. Densely gregarious, occupying a definitely-limited area of the stem; perithecia minute (one sixth millim.), covered by the epidermis, which is raised and fissured over them, but not blackened, though the black perithecia are visible through it; ostiolum papilliform, only slightly prominent; ascigerous nucleus, white; asci nearly cylindrical, about $70 \times 7 \mu$ subsessile, without paraphyses, and containing eight biseriate, fusiform, slightly curved, hyaline, granulate at first, then uniseptate, sporidia $20-23 \times 3-3\frac{1}{2} \mu$. The specimens found grow around the base of the stem, extending up for about 2 inches, where it was abruptly succeeded by *Sphærella baptisiæcola*, Ck., in which the perithecia are more scattered and the sporidia shorter ($12-16 \mu$), broader ($4-5 \mu$) and continuous. The specimens of this latter species, in Rav. F. Am., are not well developed and have the spores narrower ($3-3\frac{1}{2} \mu$) and more acute, as described by Cooke.

DIMEROSPORIUM XYLOGENUM, E. & E.—On decaying wood of *Salix*. Louisiana. Langlois, No. 371. Perithecia superficial, scattered, depressed-hemispheric, rough, one sixth to one fourth millim., with an obscure, papilliform ostiolum; asci obovate, contracted below into a short stipe, $35-40 \times 20-24 \mu$, without paraphyses, and containing 8 oblong-elliptical, 1-septate, granular, subhyaline, $15-16 \times 8 \mu$ sporidia. Differs from the usual type of *Asterina* and *Dimerosporium* in its habitat and the absence of any definite mycelium.

DIMEROSPORIUM SPARTINÆ, E. & E.—On dead lower sheaths of *Spartina polystachya*, Plaquemines Co., La., May. Langlois, No. 428. The mycelium forms small (2—4 millim. long), oblong or elliptical, black patches, consisting of a thick growth of erect, simple, septate, subnodulose, sterile hyphæ, nearly hyaline at first, but soon opaque, $130-175 \times 6-8 \mu$, and pale, yellowish, prostrate hyphæ, producing fusoid-cylindric or subfalcate, nucleate conidia, $40-60 \times 3 \mu$. Nestling among the sterile hyphæ are black, membranaceous, subovate perithecia, $\frac{1}{4}-\frac{1}{2}$ millim. in diam., with a very large opening above; asci clavate-cylindrical, $75 \times 15 \mu$, with imperfectly-developed paraphyses; sporidia 8 in an ascus, oblong-cylindrical, yellowish (nearly hyaline), slightly curved, 3—4-nucleate, becoming uniseptate, $18-20 \times 4-5 \mu$. Some sporidia were seen imperfectly 3-septate, but one septum seems to be the normal state. This is remarkable for the large apical opening, more like a half-grown *Cenangium* than like an ostiolum.

DIDYMOSPHERIA PARDALINA, E. & E.—On dead stems of *Spartina polystachya*, May. Langlois, No. 429. Perithecia gregarious in groups of 4—6, whose position is indicated by suborbicular or elliptical, black spots, 2—4 millim. in diam., or by confluence more entirely sunk in the substance of the stem, rather large ($\frac{1}{2}$ millim.), with thick, coriaceous walls and minute punctiform ostiolum, not elevating the epidermis; asci cylindrical, $150-200 \times 12-15 \mu$; sporidia uniseriate, oblong-cylindrical, olive-brown, 1-septate and constricted, slightly curved, ends obtuse, $22-30 \times 8-10 \mu$.

AMPHISPHERIA SUBICULOSA, E. & E.—On decorticated poplar. Langlois, No. 382. Perithecia superficial, gregarious, depressed-globose ($\frac{1}{8}$ millim.), brown-black, rough, but subshining above when viewed obliquely; ostiolum radiate-sulcate, not prominent. The lower part of the perithecia is clothed with a coat of brown, branching hairs, which also cover thinly the surface of the matrix around and between the perithecia, some of which touch each other but are not confluent; asci cylindric-clavate, $90-100 \times 12-15 \mu$, with abundant paraphyses; sporidia biserial, oblong, pale brown, 1-septate and slightly constricted at the septum, ends obtuse and each cell nucleate, $15-20 \times 4-5 \mu$.

MELANOPSAMMA CUPRESSINUM, E. & E.—On bleached wood of cypress pickets and red cedar. Langlois, No. 394 and 326. Perithecia emergent, superficial, gregarious, $\frac{1}{4}-\frac{1}{8}$ millim. in diam. (on cypress), rather more elongated and subhysteriiform on red cedar, rough, carbon-aceo-membranaceous, with a broad and rather depressed opening above (probably with a prominent ostiolum at first); asci clavate-cylindrical, $70-75 \times 10-12 \mu$, with filiform paraphyses and 8 biserial, yellowish-hyaline, clavate-oblong, 1-septate, about $12 \times 4 \mu$ sporidia.

DIPLODIA FRUMENTI, E. & E.—On dead stalks of *Zea Mays*, June. Langlois, No. 493. Perithecia globose, sometimes with a stout, cylindrical ostiolum, subcaespitose or often seriate, bursting out through longitudinal cracks; sporules elliptical, brown, 1-septate, $15-18 \times 12 \mu$, on stout pedicels. Very different from *Diplodia Zeæ*, Lev.

MYXOSPORIUM SUBVIRIDE, E. & E.—On dead limbs of birch, Plainfield, N. J. G. F. Meschutt. Acervuli scattered, subepidermal, raising the epidermis into distinct pustules and discharging the oblong, greenish-hyaline sporules, $7-13 \times 4-5 \mu$ (mostly $11-12 \times 4-4\frac{1}{2} \mu$) in a greenish, amber-colored mass.

PESTALOTZIA PRIMARIA, E. & E.—On dead *Scirpus fluviatilis*, May. Langlois, No. 443. Acervuli hysteriiform, black, erumpent-superficial, about $\frac{1}{2}$ millim. long, scattered; conidia oblong-cylindrical, yellow-brown, at length 1-septate, with a crest of three short, hyaline, spreading bristles, $6-9 \mu$ long and slightly thickened at their tips; pedicels filiform, $10-12 \mu$ long. The conidia are at first continuous. Very different from *P. versicolor*, Speg., var. *Americana*, which is also on *Scirpus*.

MELANCONIUM SALICINUM, E. & E.—On dead limbs of *Salix nigra*. Langlois, No. 374. Acervuli scattered, tuberculiform, or often truncate above, about 1 millim. across, closely surrounded and margined by the raised epidermis; spores ovate-elliptical, brown, $10-12 \times 6-7 \mu$. Differs from *M. bicolor*, Nees., in its habitat and absence of the white stroma.

STILBUM MACROCARPON, E. & E.—On rotten wood. April. Langlois, No. 465. Stem white, cylindrical or compressed, loosely floccose-fibrillose, $\frac{1}{2}$ millim. high by about 75μ thick; head subglobose, black, $100-125 \mu$ in diam.; conidia oblong, granular and nucleate, $12-20 \times 6-7 \mu$, subcatenulate on the tips of the fibres which compose the stem, involved in mucus, closely compacted into a firm, black head. Excepting the black head, scarcely distinguishable, outwardly, from *S. parvulum*, C. & E. Remarkable for its large, subcatenulate conidia.

HELMINTHOSPORIUM SPICULIFERUM, E. & E.—On large, white, dark-bordered spots, on leaves of *Sabal palmetto*, Louisiana. Langlois, No. 426. Sterile hyphæ, effused, simple, erect, brown, subundulate, continuous (or faintly septate ?), $100 \times 2\frac{1}{2}$ — 3μ ; conidia oblanceolate, pale brown, 5—9-septate, narrowed below into a slender, subhyaline base, more abruptly contracted above, with the apex truncate and darker brown. Sometimes the conidia are constricted at one or more of the septa. Forms a thin, velutinous coat, scarcely visible to the naked eye.

PERICONIA LATERALIS, E. & E.—On dead herbaceous stems. June. Langlois, No. 489. Fertile hyphæ, erect, subulate, septate, opaque, 250 — 300μ high and 8 — 10μ thick at base, nearly straight and bearing on one side, just below the tip, a flattish cluster of globose, yellowish-brown, echinulate, 10 — 12μ , conidia. The hyphæ appear, under the lens, like a thin, erect, black pubescence, and the part of the stem occupied is mostly blackened. The habitat is that of *P. byssoides*, Fr. (*Sporocybe byssoides*, in N. A. F.) The conidia have a large nucleus of a lighter shade.

ISARIOPSIS SUBULATA, E. & E.—On decaying stalks of *Zea Mays*. Langlois, No. 495. Stipe subulate, 1 — $1\frac{1}{2}$ millim. high, tapering above and lighter colored, composed of rather closely-compacted, brown hyphæ, with free-spreading, hyaline, squarrose-spreading tips on all sides above, bearing the hyaline, mostly 2-nucleate, ovate, 7 — $8 \times 4 \mu$ conidia. The stipe is subbulbous and strigose at base. This varies from the generic character as given by Fresenius, in the conidia not being septate.

STERIGMATOCYSTIS DASYTRICHA, E. & E.—On decaying wood, lying on the ground. May. Langlois, No. 441. Fertile hyphæ, effused, velutinous, erect, pale, olive-brown, septate, 250 — 300×6 — 8μ , the oblong or ovate, enlarged apex thickly covered with coarse, nodulosely-branched sterigmata, 20 — $25 \times 4 \mu$, obtuse and sublobate at the tips, and with short, rudimentary, lateral branches or projections, which are often little more than mere swellings or tubercles, irregularly arranged and all together, forming an oblong head, 45 — 60μ long by 20 — 25μ thick; conidia oblong-cylindrical, hyaline, 5 — $7 \times 1\frac{1}{4}$ — $1\frac{1}{2} \mu$, borne either singly or 2—3-catenuate on the tips of the basidia. Under the lens or even to the naked eye, the conidia are white, causing the olivaceous, velutinous hyphæ to appear sprinkled with gray. The general appearance is that of *Menispora glauco-nigra*, C. & E.

NOTES ON FLORIDA FUNGI.--No. 8.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

36. POLYPORUS NIPHODES, B. & Br. var.—Resembles *Irpex* somewhat; pores more open than in *P. niphodes*. Rare.

37. POLYPORUS FLORIDANUS, Berk.—Somewhat abundant, growing unattached except at base. Not resupinate as is *P. pergamenus*, which it might be mistaken for were it not for the color, which is grayish slaty above and dark underneath.

38. GLEOPORUS CONCHOIDES, Mont.—Not common (*P. nigromarginatus*, Schw.) On fallen limbs.
39. HYMENOCHÆTE CORRUGATA, B.—Abundant on rotten limbs in damp places. Color light. Surface frequently broken. Easily distinguished from the next species.
40. HYMENOCHÆTE INSULARIS, B.—Common. Color umber. Generally spread evenly over the surface of rotten limbs, but occurs in small, detached patches the size of a dime, which may have suggested the name. This is *H. cervina*, according to Ellis.
41. THELEPHORA PEDICELLATA, Schw.—Found encircling the limbs of living *Myrica* and young *Quercus* in damp places. Never found on dead trees. Of a gray color. Common.
42. THELEPHORA FLORIDANA, E. & E., n. sp.—On a dead fallen tree. Rare. For descr., *vide* JOURN. MYCOL., April, 1886.
43. HYPOCHNUS ALBOCINCTUS, Mont.—In myriads on living trees, notably on *Magnolia grandiflora*.
44. HYPOCHNUS RUBROCINCTUS, Ehrb.—Abundant with the preceding species. Both are claimed by lichenologists, with reason, probably.
45. EXIDIA GLANDULOSA, Fr.—Not uncommon on small, dead branches.
46. GRANDINIA TUBERCULATA, B. & C.—Rather abundant. A fine species.
47. GRANDINIA GRANULOSA, Fr.—Rare on a dead limb.
48. GRANDINIA CRUSTOSA, Fr.—Rare on limbs.
49. HYDNUM FRAGILLISSIMUM, B. & C.—Abundant on the under side of old logs and bark. Of a rich saffron color.
50. HYDNUM LÆTICOLOR, B. & C.—Of a richer color than the preceding, and quite rare on fallen limbs.
51. HYDNUM CARYOPHYLLATUM, B. & C.—On fallen limbs. Variable in color from a dirty yellow to light.
52. HYDNUM OCHRACEUM, Pers.—Abundant in dry woods.
53. HYDNUM CAPUT-MEDUSÆ, Bull.—Beautiful and rare. Only one specimen found, and this in a cedar swamp of perpetual darkness. The growth was such as might well suggest the above name. The long teeth were of a beautiful pink color, and as seen alive, they seemed to resent my rude touch as I plucked the prize from the fostering, living *Juniperus*.
54. HYDNUM FASCICULARIA, B. & C.—On dead limbs in dry woods, but not a common species.
55. HYDNUM WEINMANNI, B. & C.—Very rare and fine.
56. HYDNUM PULCHERRIMUM, B. & C.—(*H. cirrhatum*, Pers.) Found on a dead *Nyssa* in damp woods. Rare. A fine species.
57. AILOGRAPHUM QUERCINUM, E. & M.—Abundant on leaves of *Quercus*.
58. ASCOBOLUS CARNEUS, Pers.—Common on old cow dung under shelter.

59. *ASCOBOLUS PURPURASCENS*, Pers.—In same situation as No. 58.
60. *KNEIFFIA SETIGERA*, Fr.—Occasional on fallen limbs.
61. *CORTICIUM POLYGNIMUM*, Fr.—On fallen limbs. Well marked. Not common.
62. *CORTICIUM ALUTARIUM*, B. & C.—Common at times in dry woods.
63. *CORTICIUM OCHROLEUCUM*, Fr.—On old fallen limbs and trees, under side, in contact with the earth. White. Velvety in texture. May be the same as *C. radians*, Berk., an unpublished species from Venezuela, and Mr. Ellis thinks it is *C. radiosum*, Fr.
64. *CORTICIUM OCHROLEUCUM*, Fr., var.—Distinct from No. 63 by its ochre-red color, which is well defined in every specimen. It should be called a good species.
65. *CORTICIUM ARACHNOIDEUM*, B.—Abundant on fallen limbs.
66. *CORTICIUM LACTESCENS*, B.—Very common. White, milky.
67. *CORTICIUM PORTENTOSUM*, B. & C.—White, thick, under side of old logs. Resembles No. 63. This is a tropical species.
68. *CORTICIUM INCARNATUM*, Fr.—Common.
69. *CORTICIUM DENDROIDEUM*, n. sp. MS.—Found on a small limb. Color brownish-yellow.
70. *CORTICIUM CERVICOLOR*, B. & C.—No. 20 and 150 of Ellis, who thinks it may yet prove to be a new genus. Very rare and fine.
71. *CORTICIUM SULFUREUM*, Fr.
72. *CORTICIUM DRYINUM*, B. & C.—On fallen bark. Rare.
73. *CORTICIUM GIGANTEUM*, Fr.—Not common. Much like *C. subgiganteum*, B. & C., *laeve*, Pers.
74. *CORTICIUM SUBGIGANTEUM*, B.—Not uncommon.
75. *CORTICIUM LÆVE*, Pers.—Abundant on limbs. Hard to separate from 73 and 74.
76. *CORTICIUM PETERSII*, B. & C.—On rotten wood. Abundant.
77. *CORTICIUM GLABRUM*, B. & C.—On dead bark.
78. *CORTICIUM SCUTELLARE*, B. & C.—Well marked. On limbs.

It appears that *Corticium* abounds in species. There may be others, but we are certain of the foregoing, and their elimination has fully occupied the time of Mr. E., myself and others. They will receive, however, further study, and the results will be noted.

NOTE AND CORRECTION.

It is stated on page 87 in connection with the collection made by the Rev. A. B. Langlois that Plaquemines county is not far from Baton Rouge. Mr. Langlois informs us that this is true of Plaquemines *city*, but that Pointe a la Hache (his P. O. address), the county seat of Plaquemines *county*, is 200 miles from Baton Rouge, below New Orleans. If Plaquemines is not at all mentioned in his address, no confusion would arise.

On page 54, 24,000 should read 2,400.

POLYPORUS OFFICINALIS, FRIES.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

This fine and rare species is found occasionally growing in dead places on living *Pinus Strobus* in the forests of Michigan. It is not common. I know of a specimen that has been in an office here for ten years, and during this time has been an object of curiosity as well as of usefulness. This specimen is about one foot long and eight inches in diameter, perfectly round, and uniform in size from base to top, or nearly so. The growth was made in concentric layers, each a little over one half an inch in thickness and slightly overlapping the one below. The color throughout is white; pores visible; taste very bitter and similar to that of quinine, in place of which, indeed, myself and many others have used it. Up to this time, nearly one half of it, except the shell, has disappeared. Its virtue as a tonic is undoubted. According to Fries, as I learn from Ellis, it seems that the old Greek botanist, Dioscorides, was acquainted with and mentions this valuable species in a work he published, *MATERIA MEDICA*, during Nero's reign. Therefore its medical virtues have been long esteemed. During our late war, it was used to some extent when quinine could not be obtained. From numerous inquiries, I am satisfied that it is rarely found in the pine forests of Michigan, and it is certain that no specimens are ever thrown away. The one here is carefully guarded.

NEW LITERATURE.

BY W. A. KELLERMAN.

“PRIMO CENSIMENTO DEI FUNGHI DELLA LIGURIA.” Per F. Baglietto. *Nuovo Giornale Botanico Italiano*. 12 Luglio, 1886.

“KRYPTO GAMEN FLORA VON DEUTSCHLAND, OESTERREICH UND DER SCHWEIZ, PILZE.” 24 Lieferung. *Pyrenomycetes* (*Sphæriaceæ*). Von Dr. G. Winter.

This Lieferung includes pp. 657–736. The descriptions of twenty-seven more species of *Diaporthe* are given, also two of *Mamiana* and 102 species of *Valsa*. Dr. Winter has taken this last genus in the wide sense of Nitschke for three reasons, namely: because the relationship of all the forms here united is very close, because of the structure of the stroma and its significance we know scarcely anything, and because if *Valsa* is divided into many genera according to the differences in the stroma, so also must the genera *Diaporthe* and *Anthostoma* likewise be divided, which is scarcely a practicable undertaking. He enumerates the species under the following subgenera: *Eutypa*, *Endoxyla*, *Cryptovalsa*, *Cryptosphaeria*, *Cryptosphaerella*, *Eutypella*, *Euvalsa* and *Leucostoma*.

“ASCOMYCETES OBSERVES AUX ENVIRONS DE LIEGE.” Par V. Mouton. *Bulletin de la Societe Royale de Botanique de Belgique*. Tome vingt-cinquieme, Fascicule premier, pp. 137–162, 1886.

“CARTRIBUTION A LA FLORE MYCOLOGIQUE DE BELGIQUE.” Par Mmes. E. Bommer et M. Rousseau, pp. 163–185. 1. c.

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No. 10.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 99.)

103. NECTRIA CUCURBITULA, Tode.

On bark of *Abies balsamea*, North Elba, N. Y. (Peck.) Caespitose, erumpent, perithecia ovate-globose, papillate, $\frac{1}{4}$ — $\frac{1}{2}$ millim. in diam., bright red, not collapsing, smooth; asci cylindrical, 80—90 x 6 μ ; sporidia biconical or acutely elliptical, hyaline, uniseptate, uniseriate, 12—15 x 5—6 μ (14—18 x 6—7 μ , Sacc. in Syll.)

The specimen above quoted and from which these characters were drawn was sent to us as "*N. balsamea*, C. & P.," but can not be that species, which has very different sporidia and collapsed perithecia, but is evidently the *N. cucurbitula*, Tode., as described in Sylloge, II, p. 484, and illustrated in Kunze's Fungi Selecti, No. 105.

NOTE.—When the July number of the JOURNAL was printed, we did not know that this species was found in this country.

104. NECTRIA RHIZOGENA, Cke. Grev. XI, p. 108.

"Caespitose, erumpent, stromatic, orange-red, at length scarlet; perithecia subglobose, glabrous, scarcely papillate, breaking out into small groups of 10—12 together; asci cylindrical; sporidia narrowly elliptical, uniseptate, hyaline, 8—9 x 3 μ . The conidia are those of *Tubercularia*, with a rose-colored tint and 5 x 2 μ . On exposed roots of *Ulmus*, seaboard of South Carolina (Ravenel). Clusters 1 millim. in diam; perithecia one sixth millim." The specimens in Rav. F. Am., 645, show only the depressed-tuberculariform, flesh-colored stroma and conidia.

105. NECTRIA MUSCIVORA, Berk., in Rav. Fung. Car. I, 57. (*Nectria subcoccinea*, Sacc. & Ell., Mich. II, p. 570.)

Perithecia mostly cæspitose, bright red, subovate, small (one fifth millim.), seated mostly around the margin of the small, pale, tuberculariform stroma, which, together with its group of perithecia, is mostly less than 1 millim. in diam.; asci cylindrical, 75—90 x 8—10 μ ; sporidia uniseriate, narrow-elliptical, 14—16 x 6—7 μ , yellowish-subhyaline, becoming 1-septate. On bark of living alder, West Chester, Pa. (Everhart & Haines). Distinguished from *N. coccinea* by its broader, more obtuse, yellowish sporidia and its more distinctly superficial stroma, which, in some cases at least, seems to arise from the remains of dead scale insects, which are abundant on the bark.

The above description is from the Pennsylvania specimens of *N. subcoccinea*, S. & E., which are the same as the specimens of *N. muscivora*, Berk., cited, which is, presumably, the same as *N. muscivora*, B. & Br., in Cooke's Handbk., No. 2364, though neither the Pennsylvania specimens nor those in Rav. Car. show anything of the "white lanose patches, 2 in. or more in diameter." In Ravenel's specimens, the perithecia are collapsed, the only point in which they differ from the specimens of *N. subcoccinea*.

Perithecia furfuraceous or squamulose. (*Lepidonectria*, Sacc.)

106. NECTRIA APOCYNI, Pk. 26th Rep. N. Y. State Mus., p. 84.

"Cæspitose or scattered, dull red; perithecia minute, pale ochraceous and subglabrous when moist, dull red, collapsed or laterally compressed and rough, with minute, whitish scales when dry; ostiola minute; spores biseriate, uniseptate, filiform, usually constricted in the middle, nucleate, .00065—.0008 in. long; conidia subhemispherical or irregular, small, pale red; spores fusiform, straight, .0005—.0006 in. long." Specimens found at Newfield, N. J., July, 1883, on dead stems of *Asclepias tuberosa*, with *Volutella flexuosa*, C. & E., had asci about 35 x 7 μ , sporidia 12—18 x 3½—4 μ , constricted at the septum and nucleate.

107. NECTRIA DIPLOA, B. & C. Jour. Linn. Soc., X, p. 378. Grev., IV, p. 46, var., *diminuta*.

Perithecia cæspitose, minute, ovate, subfurfuraceous, at length collapsing, light red, parasitic on some erumpent *Valsa*?; asci subsessile, oblong-cylindrical, about 65 x 10 μ ; sporidia obliquely uniseriate, oblong-elliptical, endochrome finally divided in the middle, 20—25 x 8—9 μ , hyaline or nearly so. In some of the asci, the sporidia are partially biseriate and somewhat smaller. On bark of alder. So. Ca. Ravenel. The description here given is from an examination of the specimens in Rav. Fungi Caroliniani, III, 55. In these specimens, the nuclei have disappeared. The underlying (*Valsa*)? is so completely covered by the perithecia of the *Nectria* as to be easily overlooked.

108. NECTRIA DEMATIOSA, Schw. Syn. N. Am., 1424.

"Frequent on branches of *Platanus* and *Morus*, Bethlehem, Pa. Allied to *N. cinnabarina*, but much smaller. Cæspitose, erumpent, seated

on a flattened stroma; perithecia few, globose, subglabrous, red, becoming dark, indistinctly ostiolate, collapsing, covered with subpellucid dematose hairs. The perithecia readily fall out, leaving little pits. The clusters of perithecia scarcely exceed half a line in diameter." In Grev., IV, p. 16, the sporidia are said to be "oblong, uniseptate, slightly curved. .00085—.00057 inch long."

(To be continued.)

KELLERMANNIA, ELL. & EVRHT.

BY J. B. ELLIS AND B. M. EVERHART.

KELLERMANNIA, Ell. & Evrht.—The characters of this genus, as given on page 153 and of the species on page 154, will have to be amended. In the specimens examined at that time, only *free spores* were seen and it was taken for granted that the slender prolongation on one end of the spore was a *stipe*, when, in fact, it is an awn-like appendage proceeding from the apex of the spore. The spores are sessile, or at least borne on slightly elongated cells of the proligerous layer. In the generic description, therefore, for "stipitate" read "awned" or "aristate," and in the specific description, instead of "abruptly contracted below," etc., read "abruptly contracted *above* into a slender, bristle-like awn, etc." It should also have been stated that *K. yuccægena* is the same as *Discella* (*Discula*) *anomala*, Ck. The specific name, *anomala*, was rejected as not applicable. *Kellermannia* is properly separated from *Discula* by its septate, aristate spores. The perithecia also are mostly more perfect than in *Discula*. We are indebted to Dr. H. W. Harkness for this correction and for the following two new species.

KELLERMANNIA POLYGONI, E. & E.—On dead stems of *Polygonum polymorphum*, Blue Canon, Cala. (Harkness, 3277.) Perithecia erumpent, membranaceous, of coarse, cellular structure, black, depressed-globose. $\frac{1}{2}$ millim in diam., with a perforated, papillate ostiolum; spores lanceolate, 1-septate, 30—40 μ long, including the awn-like tip, and 3—4 μ thick at the rounded base, yellowish-hyaline, granular and nucleate at first, gradually contracted above the middle into the slender, nearly straight awn. The mature perithecia may be picked out entire with the point of a knife.

KELLERMANNIA SISYRINCHII, E. & E.—On *Sisyrinchium bellum*. Berkeley, Cala. (Harkness, 3017). Perithecia scattered, minute (150 μ), covered by the epidermis, subglobose, with the upper half prominent and finally collapsing, pierced above, membranaceous, of fine cellular texture and, when moist, paler than in the preceding species; spores oblong-lanceolate, yellowish-hyaline, 3-septate, 50—60 x 5—6 μ (including the awn), which occupies about half the entire length. Resembles outwardly *Leptosphaeria permunda*, Ck., which was also on the specimens sent. The awn finally disappears, leaving the spore 22—30 μ long.

CATALOGUE OF LICHENS COLLECTED IN FLORIDA IN 1885--WITH NOTES.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

The following species were studied and determined mostly by H. Willey, Esq., which is a sufficient guarantee of careful and correct work. This quite respectable list, the result of a very little time spent by me in connection with other pursuits, shows plainly the richness of the field in *Lichens*. Florida furnishes novelties in many departments of natural history, and no less so in her *Lichen* flora, which, however, has not, as yet, been made a special study by any one. When fully explored, we may expect to find a curious commingling of northern, southern and tropical forms, many finding here, however, their limits geographically. The question of their distribution is an interesting one yet to be solved, and while the limits are plainly definable as to the *Phanerogamia* of Florida, we know next to nothing of the lower orders in this connection. With this view, the list will serve as a basis for future labor.

1. *USNEA BARBATA* (L.) Fr.—Very common on living *Cypress* trees, in low, damp grounds.

2. *THELOSCHISTES CONCOLOR* (Dicks.)—Abundant on oak and other trees.

3. *PARMELIA PERFORATA* (Jacq.) Ach.—Very abundant on oaks.

4. *PARMELIA TILIACEA* (Hoff.) Flørk.—Common on *Hamamelis*.

5. *STICTA AURATA* (Sm.) Ach.—On fallen trees among moss. Rare.

6. *PHYSMA LURIDUM* (Mont.)—Very fine. On living *Andromeda* shrubs, near water, less often on dead wood.

7. *PANNARIA STELLATA* (Tuck.) Nyl.—Rare on living *Magnolia*.

8. *PANNARIA MOLYBDÆA* (Pers.) Tuck.—Common on *Andromeda* in low grounds along with No. 6.

9. *COLLEMA NIGRESCENS* (Huds.) Ach.—Abundant on living *Andromeda*.

10. *COLLEMA AGGREGATUM*, Nyl.—Common along with No. 9.

11. *LEPTOGIUM TREMELLOIDES* (L. fil) Fr.—Abundant on living *Magnolia*.

12. *LECANORA SUBFUSCA* (L.) Ach.—On *Castanea* and other trees.

13. *LECANORA SUBFUSCA*, var. *distans*. Ach.—Common.

14. *LECANORA ATRA* (Huds.) Ach.—Common.

15. *LECANORA VARIA* (Ehrh.) Nyl.—Abundant on oaks.

16. *LECANORA VARIA*, var. *Cupressi*, Tuck.—Rare.

17. *LECANORA PUNICEA*, Ach.—Abundant on various trees. Disks bright scarlet.

18. *LECANORA FLAVIDO-PALLENS*, Nyl.—A Cuban species. Abundant.

19. *PERTUSARIA VELATA* (Turn.) Nyl.—Abundant.

20. *PERTUSARIA MULTIPUNCTA* (Turn.) Nyl.—Common on *Quercus*.

21. PERTUSARIA LEIOPLACA, Ach.—Abundant on *Magnolia*.
22. PERTUSARIA COMMUNIS, DC.—On *Quercus*.
23. THELOTREMA DOMINGENSE (Fee.) Tuckerm.—On elms and hickory trees. Abundant and fine.
24. THELOTREMA GLAUDESCENS, Nyl.—On a fallen tree. Rare.
25. GRYOSTOMUM SCYPHULIFERUM (Ach.) Fr.—Common on various trees.
26. CLADONIA MITRULA, Tuckerm.—On earth and logs. Common.
27. CLADONIA FIMBRIATA (L.) Tr.—Abundant on rotten logs.
28. CLADONIA PULCHELLA, Schw.—Abundant along with No. 27.
29. CLADONIA RANGIFERINA, Hoffm.—Very common on earth in damp woods.
30. CLADONIA SANTENSIS, Tuckerm.—On old logs. Rare.
31. GRAPHIS POITÆOIDES, Nyl., *ined.*—On oaks. Rare.
32. GRAPHIS NITIDESCENS, Nyl., *ined.*—On *Quercus aquatica*.
33. GRAPHIS AFZELII, Ach.—Very abundant on various trees.
34. GRAPHIS SCRIPTA, Ach.—Common on various trees.
35. GRAPHIS SCRIPTA, *var. assimilis*, Nyl.—Common.
36. GRAPHIS SCRIPTA, *var. sophistica*, Nyl.—Not common.
37. GRAPHIS VIRGINALIS, Tuck., *indt.*—On small oaks. Common.
38. GRAPHIS ERISTATHIANA, Tuck., *ined.*—Common on oaks.
39. GRAPHIS ELEGANS, Ach.—Rare. On holly.
40. GRAPHIS SCULPTURATA, Ach.—Rare.
41. GRAPHIS DENDRITICA, Ach.—On *Quercus aquatica*. Common.
42. ARTHONIA CINNABARINA, Wallr.—On *Magnolia*.
43. ARTHONIA GREGARINA, Willey, *ined.*—Rare.
44. ARTHONIA OCHROPILA, Nyl.—On oak.
45. ARTHONIA TÆDESCENS, Nyl.—On holly. Common.
46. ARTHONIA QUINTARIA, Nyl., *ined.*—On *Ilex*. Very fine.
47. ARTHONIA ——— ? n. sp.—On *Ilex*, and undoubtedly new. Sent to Dr. Nylander.
48. TRYPETHELIUM VIRENS, Tuck.—Common.
49. TRYPETHELIUM CRUENTUM, Mont.—Common on various trees.
50. TRYPETHELIUM SCORIA, Fee.—Abundant on *Myrica*.
51. TRYPETHELIUM CATERVARIUM, Fee.—Rare.
52. TRYPETHELIUM CAROLINIANUM, Fee.—Common.
53. TRYPETHELIUM SCORITES, Tuck.—Abundant on holly.
54. HETEROTHECIUM LEUCOXANTHUM, Spreng.—Rather abundant on various trees.
55. HETEROTHECIUM AUGUSTINII, Tuck., *indt.*—On leaves of the Saw palmetto.
56. HETEROTHECIUM TUBERCULOSUM, *var. pachycarpum*, Flot.—On oaks. Common.
57. PYRENULA SEPTATA, Nyl.—Rare on oaks.
58. PYRENULA PUNCTIFORMIS, Ach. On *Myrica* in swamps.
59. PYRENULA PUNCTELLA, Nyl.—Rare on holly.
60. PYRENULA CINCHONÆ, Ach.—On holly. Rare.
61. PYRENULA SUBPROSTANS, Nyl.—Abundant on oaks.

62. PYRENULA NITIDA, Ach.—Common on oaks.
63. PYRENULA THELENA, Tuck.—On *Quercus virens*. Very fine.
64. PYRENULA AGGREGATA, Fee.—Very common on holly.
65. BIATORA RUSSULA, Mont.—On oaks.
66. BIATORA ATRO-GRISEA, Schw.—Rare on oaks.
67. BIATORA EXIGUA, Fr.—Rare on oaks.
68. BIATORA HYPERNULA, Nyl.
69. MYCOPERUM SPARSELLUM, Nyl.—On holly. Tropical also.
70. OPEGRAPHIA VULGATA, Ach.—Common on oaks.
71. STRIGULA COMPLANATA, Fee.—On leaves of *Osmanthus*.
72. BUELLIA PARASEMA, Ach.—Very common on oaks.
73. GLYPHIS ACHARIANA, Tuck.—On oaks.

CHARLES CHRISTOPHER FROST.

BY WM. R. DUDLEY, CORNELL UNIVERSITY.

B. at Brattleboro', Vt., Nov. 11, 1805.

D. at Brattleboro', Vt., Mar. 16, 1880.

The pioneers in cryptogamic botany, in America, have been, almost without exception, professional or business men, who pursued their favorite study as an avocation. In them was developed the scientific spirit, probably in greater purity than we can ever expect to see it again. The agricultural interests had become neither sufficiently developed nor well enough organized to call on these men for a practical application of their knowledge; and, as a rule, they were eminently modest men, without even the ordinary desire for fame. The study was pursued by them, therefore, purely for a love of the knowledge gained and from an intellectual passion for investigation. Certainly this characterization must apply to the life of Mr. C. C. Frost, who described many new species of New England fungi, and whose work was always thorough, conscientious and highly respected by those who could understand and appreciate its value, viz.: his learned friends and correspondents on both sides of the Atlantic. Still, he wrote comparatively little; offers of professorships and other honors, coming altogether unsought, were declined; and he adhered throughout a long life to the trade and business to which he was bred.

Mr. Frost was of an honorable New England parentage. His father, James Frost, coming from Massachusetts when quite young, opened the first shoemaker's shop in Brattleboro'. The mother of Mr. C. C. Frost was Elizabeth, daughter of Col. Stewart, an officer in the Revolutionary war. What is now a large and flourishing town of exceptional beauty, provided with a library and fine school buildings, was, in the early part of the present century, but a country village, which had grown up near the site of the colonial Fort Dummer, and the ordinary district school furnished the only means of public instruction. We may suppose young Frost spent his winters in acquiring whatever he could from this source.

We know that he suddenly left school in his fifteenth year, for at that time he was struck a severe blow by a hot-tempered teacher, and the high-spirited lad gathered up his school books, picked up the broken ruler and carried them home as evidence of the indignity he had received and the resolution he had formed and from that day never placed himself at the mercy of any school teacher.

Although he soon entered into business with his father, he also began a course of reading and study, not for any particular end, but to satisfy the cravings of mind of a born scholar. He took up mathematics with ardor, and Hutton's mathematical series, which he had mastered at nineteen, are still on his bookshelves. He entered with equal interest into chemistry and physics, into meteorology and geology, while his collections of insects, shells, and finally his very considerable collections of plants, show the wide variety of his tastes and acquirements. Text books on all these subjects are in his library at present. He owned some important special reports and monographs in meteorology, entomology and geology, while in cryptogamic botany his library is fairly well equipped with the standard works and papers necessary to the extended study of the subject. It was probably never very fully supplied, however, for the purposes of original investigation. Beside the manuals of Berkeley and Cooke, there still remain some of the works of Persoon, Schweinitz, Fries, Greville, Nylander, DeBary and Woronin, Rabenhorst, Tuckerman, Peck and other workers in the lower cryptogamia. There are a considerable number of water-color drawings of *Boleti*, in which genus Mr. Frost was especially interested, most of them apparently copied from Krombholz and from Sowerby. There are also a number of Mr. Charles J. Sprague's exquisite pen-and-ink drawings of *Agarics*, accompanied by descriptions, sent to his friend, no doubt, to assist him in the absence of plates and authentic herbarium specimens. There are MS. descriptions of the New England fungi which he supposed to be new. Some of these, afterwards discovered to be already described, have the true specific name endorsed in pencil across them. He and his friend Sprague each purchased a valuable microscope of French manufacture, and he has many drawings and measurements of spores preserved, for supplying the deficiencies, probably, in the descriptions of the older works.

His own collections, chiefly of fungi, together with most of his important botanical works and some of his botanical correspondence, remain in the attic room, occupied by him as a study for so many years, in his house in Brattleboro'. The fungi, properly labeled, were largely put up in paper boxes, and arranged, according to their supposed affinities, on shelves about the room. Others were attached to the sheets of blank books. Unfortunately, they have been considerably disturbed by those who have called to look them over since the death of Mr. Frost, and some are in danger of being badly injured if not destroyed. Among the other papers, the writer found a manuscript catalogue of the cryptogamic specimens in Mr. Frost's own herbarium, with the locality of each added.

This catalogue covered his mosses, liverworts and fungi, and although quite full, it was impossible to ascertain its completeness without a more careful examination of the herbarium itself than could be given during a short visit.

It is said that Mr. Frost's systematic study of botany began through the advice of an eminent physician of New York, whom he consulted for a severe dyspeptic disorder. Finding that the former was fond of flowers, this physician advised him to take exercise in walking and botanizing, an hour at a time, twice each day. This regimen not only speedily altered Mr. Frost's health for the better, but he soon developed that same eager but quiet enthusiasm in the study of plants that he had shown for other sciences. It was not long before he became interested in cryptogamic botany. He made a large collection of ferns, native and foreign, which is still preserved, also one of the mosses and liverworts. Next he began to collect and study the fungi. Having obtained the ordinary English works on this subject, he sent for Fries' *Systema Mycologicum*. He found, on its arrival, that it was in Latin. He immediately procured a Latin grammar, and in six months, during the intervals of business and at night, he had learned enough Latin to easily read scientific works. In the same way, he acquired French and German, and it is said that other foreign languages, in which scientific works were written, were also read by him with comparatively little difficulty.

Mr. Frost's life was very methodical. He occupied the same store for forty-nine years, and accumulated, by thrift and good judgment, a considerable fortune; but, from a very early period, he maintained fixed daily hours for study. He regularly allowed himself a half hour for dinner, and from half past twelve till one P. M. he as regularly spent in the little attic study. He frequently went into the woods in the fresh, early morning, before business hours, and often devoted his evenings to some botanical work. Beside these hours for the study of specimens, he read much in his store, and several of the inhabitants of Brattleboro' have given the writer exactly the same reminiscence of him, viz.: that when customers called at his place of business, he almost invariably laid down a book in order to wait on them, and took it up again immediately on finishing. Every spare moment seemed to have been utilized for study. In short, his life, like that of most men, successful in the way he was, was very orderly and well arranged, and really comparatively simple, *i. e.*: Directed with considerable intensity toward comparatively few ends. Apparently, it had but two prominent aspects: First, its business side, where he was shrewd, careful and economical; second, its student side, where his accumulations were equally steady and uninterrupted. He had also strong religious convictions, and has himself said that he had not been absent from church for thirty-two years. But he steadily declined public office, and is said to have never held any of any kind. He declined to give up his business for a complete devotion to science and study. His characteristic remark, "Whatever I have acquired of

science, in my life, came through search for health and mental entertainment; science is not my profession,—shoemaking is,” expresses pretty clearly the simplicity of his own theory and practice of life.

He was not communicative on his favorite studies, except to those who understood them as he did. Indeed, it has been said that he probably had more friends beyond the Atlantic, with whom he was on terms of intimacy, than he had in his native town. Notwithstanding his regular business habits, it is pleasant to think that whenever his friend Sprague, or some other congenial spirit came to see him, he dropped all his business and they entered Mr. Frost’s study to spend forenoon and afternoon, for days at a time, or until their work was, for the time being, completed. Again, as showing the orderliness and respect pervading his domestic relations, this fact is stated by one of his family: Not long before his death, and when his health was failing, he called his two sons—his only children—into the room where his wife and himself were sitting and said to them that it was his wish that all his fortune, on his own death, should go to his wife, and then, in the event of her death before either of the sons, it should be equally divided between the latter. Both the parents have passed away, and all has been amicably adjusted in accordance with this simple wish, without the usual precautions of will and legal formality.

His portrait shows a face indicating substantial character. It might be considered that of a good business man, but it would no doubt be taken, by any stranger who was a good judge, as that of a genuine scholar and one strongly endowed with faculties both critical and reflective.

We have been somewhat particular in describing what may seem to be the trivial surroundings of this man’s daily intellectual life, because his is probably the best representative life of that class to which he belongs and which was defined at the beginning of this article: a life in which:

“The reward is in the doing
And the rapture of pursuing,”

no inducement of fame seeming ever for a moment to have influenced him. The man who not only declined positions of honor in the scientific world, but is known to have repeatedly but politely declined honorary degrees or memberships of learned societies as not worth, to him, the customary fee required in case the proffer is accepted; who maintained his peculiar self-poise and individuality in all things, is a man rare in the world of science and worth consideration and study.

What were the results of this quiet, industrious, critical study for so many years? Certainly the published results must be set down as comparatively meager, as might be expected from a man of his views. Although he published several short papers, chiefly descriptions of new species of fungi, and in the *TRANSACTIONS OF THE ORLEANS COUNTY SOCIETY OF NATURAL SCIENCES*, a “*CATALOGUE OF THE FLOWERLESS PLANTS*” of northern New England, is printed (about 1871), the best resume and indeed his chief publication, is the list of mosses, liverworts, characeæ

and fungi, given under his name in the "CATALOGUE OF PLANTS GROWING WITHOUT CULTIVATION WITHIN THIRTY MILES OF AMHERST COLLEGE," by Edw. Tuckerman and Charles C. Frost, published at Amherst, by Edw. Nelson, in 1875. This is an exhaustive catalogue, with habitats, but without localities, so far as Mr. Frost's list is concerned. After a careful scrutiny of this, the following facts are obtained :

No. of Species of Musci enumerated	- - - - -	192
No. of Species of Hepaticæ enumerated	- - - - -	47
No. of Species of Characeæ	- - - - -	7
No. of Species of Fungi (excluding Lichens)	- - - - -	1190

Looking over the Fungi proper, it is found that :

The Basidiomycetes number	- - - - -	586	species.
The Gasteromycetes (these include 46 Myxomycetes) number	- - - - -	70	"
The Coniomycetes (these include 80 Uredineæ and 8 Ustilag- inæ) number	- - - - -	160	"
The Hyphomycetes number	- - - - -	59	"
The Physomycetes number	- - - - -	9	"
The Ascomycetes (these include 25 Erysiphei)	- - - - -	206	"

The species with the authorship of "Frost" are sixty in number. Of these, twenty are in the genus *Boletus*, which has only forty-six species enumerated in the catalogue. In the *Agaracini*, he described thirty-two species, of which *Russula* included nine species, *Lactarius* nine and *Clavaria* three species. It will be seen that his original work was almost exclusively among the fleshy fungi. A copy of this catalogue, remaining in his collection, has several species added, but as only five years elapsed before his death, the number is not great. It will be at once seen by any botanist that the most valuable monument of Mr. Frost's work is his herbarium and collections of plants generally ; and this is the monument most likely to perish, unless care is taken at an early day to prevent it. These collections ought to be put in order by some competent cryptogamic botanist, and then they should be placed where they would receive permanent care and be available for reference, if needed. No doubt some one of the centers of botanical study in this country would be the most suitable place, although it would not be inappropriate to deposit them in some safe alcove of the handsome public library now building at Brattleboro', provided they could always have proper care in the future. Although there are not a large number of type specimens in Mr. Frost's collection, still the collection is too valuable to lose. Any one who knows how valuable are now the historical or family papers of the first and second century after the settlement of our country, to the investigator of any special topic, and also, how many of these were lost through neglect, can readily appreciate the value, both seen and unanticipated, which such local accumulations as these of C. C. Frost may have many years hence.

In closing, I wish to acknowledge the great kindness of Mr. Wells S. Frost, of Brattleboro', son of the botanist, in giving me information and free access to the collections and books ; also, indebtedness to the notes of Rev. Lucius Holmes. contributed at the time of Mr. Frost's death to a current periodical.

ERRATUM.

On page 98, in the eighth line of the description of *Nectria infusaria*, Cke. & Hk. (No. 100), the words "in a quadrisulcate manner as in," &c., with all that follows to the end of the paragraph, namely, twenty lines, has been intirely misplaced and should be cancelled, as it belongs to the description of *Nectria ochroleuca*, Schw. (No. 110.)

NEW LITERATURE.

BY W. A. KELLERMAN.

"BRITISH PYRENOAMYCETES, A PRELIMINARY LIST OF KNOWN SPECIES."

By G. Massee, Grevillea, September, 1886.

"EXOTIC FUNGI," (from Australia, New Guinea and Columbia.) By M. C. Cooke. l. c.

"PRÆCURSORES AD MONOGRAPHIA POLYPORORUM, CONTINUED." By M. C. Cooke. l. c.

"NEW BRITISH FUNGI." By M. C. Cooke. l. c.

"THE DEVELOPMENT OF THE GYMNOSPORANGIA OF THE UNITED STATES." Read before the A. A. A. S., 1886, by W. G. Farlow. Botanical Gazette, September, 1886.

This paper gives a summary account of continued experiments on the *Gymnosporangia* and connected *Ræstelice*, begun by Dr. Farlow in 1880. The details of experiments carried on in the Harvard Cryptogamic Laboratory last spring by student Roland Thaxter will be given by the latter. The cultures of the spores of *Gym. biseptatum* on *Amelanchier* were followed by spermogonia and æcidia of *Ræs. botryapites*. The spores of *Gym. clavipes* (growing on *Juniperus Virginiana*), sown on *Amelanchier* and apples, produced on the latter spermogonia and on the former æcidia of *Ræs. auriantaca*. The spores of the form (*Gym. conicum*) that grows on *Juniperus Virginiana*, producing the bird's-nest distortions, developed on *Amelanchier* æcidia of the species *Ræs. cornuta*. In like manner, *Gym. clavariæformis* was shown to be connected with *Ræs. lacerata*; *Gym. macropus* is likely (but not positively determined) connected with *Ræs. penicillata*; but the cases of *Gym. Ellisii* and *Gym. globosum* did not yield to satisfactory conclusions.

"ORANGE-LEAF SCAB." F. Lamson Scribner. Read before the A. A. A. S., 1886. Botanical Gazette, September, 1886.

"THE RUST OF THE ASH TREE." Charles E. Bessey. *American Naturalist*, September, 1886.

The *Accidium Fraxini*, Schw., was abundant on the green ash (*F. viridis*) last year at Lincoln, Neb., also, according to Dr. Halsted, at Ames, Iowa, but this year, at both places, Dr. Bessey reports it extremely scarce. Curiously enough, the fungus at this place (Manhattan, Kans.) was *very* abundant this year, but rather scarce in 1885.

"REVISION DER HYSTERINEEN IM HERB. DUBY." Von Dr. Rehm. *Hedwegia*, Juli und Aug., 1886.

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MANHATTAN, KANSAS, NOVEMBER, 1886.

No. 11.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 111.)

109. *NECTRIA TREMELLOIDES*, E. & E. On bark of dead willow, Plaquemines county, La., July, 1886. Langlois, No. 592.

Perithecia gregarious, ovate, 300 μ in diam., coarsely furfuraceous and subtuberculose-roughened, pale orange, with a distinctly papillose-conic ostiolum; asci about 50 x 7—8 μ , cylindric-clavate, sessile, imperfectly paraphysate; sporidia biseriate, oblong-elliptical, 2-nucleate, becoming 1-septate, 8—12 x 3—4 μ , hyaline. The asci are contracted at the apex into a short truncate apiculus.

110. *NECTRIA OCHROLEUCA*, Schw. Syn. N. Am., No. 1418. On limbs of various deciduous trees, Carolina and Pennsylvania (Schweinitz). On dead limbs of *Laurus Benzoin*, West Chester, Pa. (Everhart). N. A. F., 773.

Stroma granulose-bysoid, subpulvinate and nearly white at first, becoming firmer and yellowish; perithecia 3—15 on a stroma, ovate-globose, dull yellowish-white, mostly less than one third millim. in diam., surface densely furfuraceo-squamulose, except at the apex, around the rather darker, slightly-depressed, papilliform ostiolum, where the edge of the squamulose coat forms a miniature crown or wreath, giving the apex of the perithecium the appearance of the blossom end of an apple, or sometimes the scaly coating is divided in a substellate-cleft fashion as in some *Valsas*; asci clavate-cylindrical, 45—55 x 10—12 μ ; sporidia biseriate, oblong-fusoid, 1-septate, 12—16 x 4—5 μ .

Mr. Wm. C. Stevenson, Jr., has compared the N. A. F., specimens with those in Herb. Schw., and finds them the same.

NOTE.—The portion of description of *Nectria infusaria*, Cke. & Hark. (No. 100), on page 98, beginning in the eighth line as follows : “in a quadrisulcate manner,” &c., and continuing to end of same paragraph, was originally intended to form a part of the description of *N. ochroleuca*, Schw., but became misplaced. It should therefore be removed from page 98.

C. *Sporidia pluriseptate*.

111. NECTRIA BALSAMEA, C. & P. Grev. XII, p. 81. On *Abies balsamea*, North Elba, N. Y. (Peck).

“Cæspitose, erumpent, suborbicular ; perithecia small, smooth, scarlet, papillate, at length collapsing, crowded on a pale stroma ; asci cylindric-clavate, 8-spored ; sporidia fusiform, 5-septate, hyaline, (.03 x .077 millim.) “.077 ” is apparently a typographical error for .0077. The specimens of this species sent us by Prof. Peck are, as stated elsewhere, *N. cucurbitula*, Tode., so that we can only copy the description in *Grevillea*, and this agrees so well with that of *N. cucurbitula*, Fr. (Syll. II, p. 543), that it may reasonably be suspected that this is, in reality, that species and that the measurement of the sporidia, “.03 x .077,” is erroneous.

112. NECTRIA AURIGERA, B. & Rav. Grev. IV, p. 46. Rav. Fung. Car. V, 60. Ell., N. A. F., 79. On *Fraxinus* and *Chionanthus*.

Erumpent, cæspitose, stroma pale brick-red, mostly subelliptical, perithecia globose, about one third millim. in diam., covered with a yellow powder ; ostiolum papilliform, collapsing ; asci sublanceolate, 55—60 x 12—15 μ ; sporidia subbiseriate, oblong cylindrical, straight or slightly curved, yellowish, 6—8-septate, 20—24 x 5—6 μ . Var. *flavitecta*, B. & C. (Grev. l. c.), on *Kerria Japonica*, has the “sporidia larger and quadrisepate, sometimes with a gelatinous coat.” Probably not distinct from the next.

113. NECTRIA POLYTHALAMA, Berk. Fl. New Zealand II, p. 203. Grev. IV, p. 46.

The specimens of this species in Rav. Fungi Car. III, 54 (on *Fraxinus*), differ from the preceding species only in the absence of the yellow powder on the perithecia. This is also wanting on some specimens of *N. aurigera*, the perithecia, in that case, being of the same dull red as in this species. There is no shadow of difference in the asci and sporidia, at least as the two are represented in Rav. Fungi Car., and if, as there is no reason to doubt, the specimens there distributed are authentic, the two species are the same, and, in that case, the specific name, *polythalamia*, would have precedence.

114. NECTRIA CANADENSIS, E. & E. Bull. Torr. Bot. Club XI, p. 74. On bark of dead elm, Ottawa, Canada. Macoun, No. 225 and 311.

Perithecia cæspitose, ovate-globose, $\frac{1}{4}$ — $\frac{1}{2}$ millim. in diam., dull red, densely tuberculose-granular ; ostiola not prominent, more or less distinctly stellate-cleft and finally collapsing slightly ; asci sublanceolate, 75—80 x 10—12 μ , without any distinct paraphyses ; sporidia subbiseriate, hyaline, oblong-elliptical, 3-septate, slightly curved, ends obtuse, 18—22 x

7—9 μ . The conidial stage is a *Tubercularia* about two millim. high, bursting out in a seriate manner through cracks in the outer bark, having an orange-red head and brick-red, stipitate base. From the basal or medial part of the stipitate base, perithecia originate and finally entirely surround and overtop the orange-colored heads of conidia, which are either entirely hidden or remain partially visible in the midst of the dense clusters of perithecia; conidia oblong-cylindrical, hyaline, continuous, 5—7 x 2½ μ .

D. *Sporidia muriform.* (*Pleonectria*. Sacc.)

115. NECTRIA BEROLINENSIS, Sacc. Mich. I, p. 123. (*Nectria Ribis*, Niessl., non Tode. *Pleonectria Ribis*, Karst.) On dead stems of *Ribis*. Massachusetts (Farlow), Michigan (Spalding), Wisconsin (Trelease), Canada (Poe).

Perithecia erumpent-superficial, caespitose, globose-depressed, ¼—½ millim. in diam., finally collapsing to cup-shaped, of a brick-red color and loosely-cellular structure; ostiolum not prominent; asci cylindrical, sessile, 90—115 x 10—14 μ , subtruncate above; sporidia uniseriate, oblong-elliptical, obtuse at each end, 5—7-septate and muriform, not constricted, minutely guttulate, hyaline, 16—22 x 7—8 μ .

We are allowed to add the following notes from Dr. W. G. Farlow, who writes us that No. 6140, collected in Canada by Poe and marked in the Curtis collection, *Nectria fenestrata*, B. & C., but in *Grevillea* IV, p. 46, referred to *Sphærostilbe pseudotrichia* (Schw.), though evidently the same as the specimens collected by him in Massachusetts and distributed in N. A. F., No. 470, is different from authentic specimens of *Sphæria pseudotrichia*, Schw. (from Surinam), which, besides its peculiar-shaped conidia, has the ascospores larger, about 38 μ , with a crenulated outline.

GEN. VIII, BYSSONECTRIA, Karsten.—Stroma more or less byssoid; perithecia subsuperficial, crowded; sporidia (in the American species) hyaline.

* *Sporidia continuous.*

116. BYSSONECTRIA FIMETI, Ck. Grev. XI, p. 108. Rav. F. Am., 646. On cow dung, Aiken, S. C. (Ravenel).

Perithecia gregarious or scattered, golden yellow, subglobose, seated on a byssoid, golden-yellow stroma, bare and glabrous above, tomentose below; asci cylindrical; sporidia elliptical, continuous, hyaline, 15 x 8 μ .

* * *Sporidia uniseptate.* (*Hyphonectria*).

117. BYSSONECTRIA CHRYSOCOMA, Ck. & Hark. Grev. XII, p. 101. On wood of *Eucalyptus*, California. Harkness, 2321.

Stroma fibrose-byssoid, golden yellow, effused; perithecia gregarious, minute (1—1½ millim.), obovate, thin (tenuibus), dark yellow, semi-immersed in the stroma; asci clavate, 8-spored; sporidia biseriate, narrowly-elliptical, uniseptate, hyaline, 10 x 2—2½ μ .

118. *BYSSONECTRIA ROSELLA*, Ck. & Hark. Grev. l. c. On dead grass, California. Harkness, No. 2441.

Delicate, effused, with a rose-colored tint; hyphæ creeping, interwoven, with the minute, obscure perithecia scattered on it; conidia lunate, like those of *Fusarium*, acute at each end, 5-septate, mostly nodulose and hyaline, $40 \times 5-6 \mu$. Unfortunately, in an immature condition.

GEN. IX, *DIALONECTRIA*, Sacc. (in part).—Perithecia free, superficial, gregarious or scattered, carnose, glabrous, bright-colored.

A. *Sporidia continuous*. (*Nectriella*.)

119. *DIALONECTRIA VULPINA*, Ck. Grev. XII, p. 83. Ell. N. Am. Fungi, 774. On rotten wood of maple and apple tree, New Jersey and Pennsylvania.

Perithecia gregarious or scattered, light yellow, about one half millim. in diam., globose at first and thinly clothed with short, erect, subglandular hairs and subfurfuraceous, finally collapsing so as to be easily mistaken for a *Peziza*; asci clavate-cylindrical, $35-45 \times 6-7 \mu$, 8-spored; sporidia either biseriate, $8-11 \times 3-3\frac{1}{2} \mu$ or obliquely uniseriate, $8-12 \times 4-4\frac{1}{2}$, elliptical or oblong-elliptical, 2-4-nucleate, with some sporidia in old specimens, becoming uniseptate.

120. *DIALONECTRIA MYCETOPHILA*, Pk. 26th Rep. N. Y. State Mus., p. 85. On decaying fungi, New Scotland, N. Y. (Peck).

“Perithecia crowded or scattered, minute, smooth, subglobose, pale yellow when young, then pinkish-ochre; ostiola minute, papillate, distinct, darker-colored; asci subclavate; sporidia oblong, simple, $12-13 \times 4 \mu$.”

B. *Sporidia uniseptate*. (*Eu-Dialonectria*.)

(a.) *Growing on wood or bark*.

121. *DIALONECTRIA SANGUINEA* (Sibth.) Fr. Sum. Veg. Scand., p. 388. Fr. S. M. II, p. 453.

Perithecia scattered, adnate, ovoid, rarely subsphæroid; ostiolum papilliform, smooth, blood-red, rarely flesh-color, soft, about 180μ in diam.; asci cylindrical, $50-60 \times 5-6 \mu$, 8-spored; sporidia obliquely uniseriate, elliptical or subelliptical, unequally 1-septate, slightly constricted, hyaline or with slight tinge of rose-color, $7-10 \times 4-5 \mu$. Common on moist decaying wood and bark of various deciduous trees. Saccardo properly observes that this scarcely differs from *N. episphæria*, Fr., except in its ovoid, scarcely collapsing perithecia and its less distinctly septate sporidia.

122. *DIALONECTRIA PEZIZÆ* (Tode.) Fr. Summ. Veg. Scand., p. 388. On decaying wood and bark. South Carolina (Ravenel), Massachusetts (Murray). See Grev. IV, p. 16.

Perithecia gregarious, superficial, spherical, becoming concave by collapsing, subpapillate, reddish-orange, fading at length, subpilose at base, soft, about one third millim. in diam.; asci very shortly pedicellate, cylindrical or clavate-cylindrical, $80-90 \times 8-10 \mu$ when young, suberistate at the apex, 8-spored; sporidia subuniseriate, elliptical, obtuse at each end, uniseptate, but not constricted, each cell nucleate, hyaline, $10-14 \times 5-6 \mu$.

123. *DIALONECTRIA TRUNCATA* (Ell.) Am. Nat., February, 1883, p. 194. N. A. F., 1332. On the inside of white cedar bark, stripped from the living tree and left lying on the ground. Newfield, N. J., Sept., 1882.

Perithecia gregarious, minute (one eighth to one sixth millim.), flesh-color, subglobose or ovate, the apex flattened into a circular, granular-roughened disk, with the edges lightly projecting; ostiolum in the center of the disk, minute, papilliform, brown; asci sublanceolate, $35 \times 5 \mu$; sporidia biseriate, oblong-fusiform, subhyaline, uniseptate and slightly constricted around the middle, $11-13 \times 2\frac{1}{2}-3 \mu$.

124. *DIALONECTRIA UMBELLULARIÆ* (Plow. & Hark.) Trans. Cal. Acad. Sci., 1884, p. 26. On *Umbellularia*, California (Harkness, No. 2882).

Perithecia superficial, scattered, $200-230 \mu$ in diam., globose, subhyaline, with a pale tinge of flesh color, beset with a few hyaline, mycelial threads externally; ostiola obtuse; asci clavate, $50 \times 10-15 \mu$; sporidia hyaline, ovate, uniseptate, $10-12 \times 5-8 \mu$.

(To be continued.)

A NEW GENUS OF MYXOMYCETES.

BY HAROLD WINGATE, PHILADELPHIA, PA.

The following genus comes under the family *Stemonitaceæ*.

ORTHOTRICHIA, Wingate, nov. gen.—Sporangium globose; stipe elongated, entering the sporangium as a very short or obsolete columella and then dividing into a few branches at a sharp angle. These branches fork several times, thus forming a capillitium of straight threads. The last branches meet at the surface of sporangium at a very sharp angle by twos or threes, where they are joined together by small membranaceous plates. Wall of the sporangium, with the exception of the plates and a very small collar around the stipe, not apparent.

ORTHOTRICHIA MICROCEPHALA, Wingate, sp. nov.—Sporangia globose, very variable in size, from one twelfth to one fourth of a millim. in diameter; stipe elongated, brown or blackish at the base, growing lighter towards the top, more or less translucent, ten to thirty times the diameter of the sporangium in height, tapering, rugose, except at the upper part,

where it more or less suddenly becomes a smooth filament, entering the sporangium as a very short, sometimes almost obsolete columella. It then divides into a few (sometimes only two) branches at a sharp angle. These branches fork several times, forming a very loose capillitium of straight threads, the last branches meeting at the surface of the sporangium by twos or threes at a very sharp angle, where their slightly thickened ends



are joined together by minute, membranaceous plates. Sporangium wall not apparent, except a slight collar around the stipe as it enters the sporangium; spores brown in mass, very light-violet, almost colorless, under the microscope, perfectly smooth, $7-8 \mu$ in diameter. On rotten logs Philadelphia, Pa.

This plant has been found during three seasons in Fairmont Park, Philadelphia, Pa., in many localities. The plasmodium has a dirty-brown color. When erecting, the dark, granular substance of the mass is left in the matter which is to form the stipe, and the globule of the sporangium becomes milky white. Before the stipe has reached its full height, say in the upper fifth, the sporangium mass leaves behind it, clustered around the stipe, several (2—8) clear, highly-refractive, minute globules, which, in the recently-matured plant, sparkle like dewdrops. The plant continues erecting, but from the place where the globules are left behind, the stipe very frequently suddenly narrows, sometimes to a mere filament. As the plants become old, the dew-like globules become amber-colored, but remain transparent. These clear globules have been occasionally noted by the writer on the sporangium wall of *Comatrichas* and have been considered as an indication of some degree of immaturity, hence they have not been mentioned in the description as having a specific value. In the plants, as found in different places, they are constant, though sometimes fused into one mass. The finer filaments of the capillitium, in fluid under the microscope, are almost colorless. The plants are more or less sociable, sometimes forming patches an inch or so in diameter and may readily be mistaken for a mould.

NOTES ON FLORIDA FUNGI.--No. 9.

BY W. W. CALKINS, CHICAGO, ILLINOIS.

79. *PHYLLOSTICA MYRICÆ*, Cke.—On leaves of *Myrica* in millions.
80. *GIBBERA MORICARPA*, Cke.—On bark of dead *Carya*.
81. *MELIOLA MANCA*, E. & M.—Abundant on leaves of *Quercus*.
82. *MELIOLA AMPHITRICA*. Fr.—Abundant with the preceding species.
83. *MELIOLA FURCATA*, Lev.—On leaves of saw palmetto.
84. *NECTRIA ERUBESCENS*, Desm.—Rare. Found on living leaves of *Osmanthus Americana*, *Myrica cerifera* and *Quercus*, but never abundantly.
85. *NECTRIA POLIOSA*, E. & E., n. sp.—Parasitic on *Diatrype stigma*. Described in April No. JOURNAL OF MYCOLOGY.
86. *HELMINTHOSPORIUM FUMOSUM*, E. & M.—On leaves of *Persea Caroliniana*.
87. *PEZIZA CHRYSOCOMA*, Bull.—Rare on rotten wood.
88. *PEZIZA CRATERIUM*. Schw.—Rare on rotten limbs.
89. *XEROTUS VITICOLA*, B. & C. (*X. lateritius*, B. & C.)—This fine species I found in great abundance on dead *Carpinus* in the winter of 1885. Not found on any other wood. During last winter, not one was to be found. Evidently not annual.
90. *ASTERINA OLEINA*, Cke.—*A. discoidea*, E. & M., *A. pustulata*, E. & M. As Mr. Ellis thinks the two latter may be referred to the above species, I concur. Abundant on various leaves.

91. *ASTERINA ORBICULARIS*, B. & C.—Abundant on leaves of *Ilex*.
92. *ASTERINA ASTEROPHORA*, E. & M.—On leaves of *Osmanthus*.
93. *ASTERINA STOMATOPHORA*, E. & M.—On leaves of *Q. laurifolia*.
94. *LENTINUS LE CONTEI*, Fr.—Abundant on old logs.
95. *LENZITES CORRUGATA*, Klot.—Common on fallen limbs.
96. *LENZITES SEPIARIA*, Fr.—Only on fallen pine logs.
97. *LENZITES BETULINA*, Fr.—On dead logs.
98. *MERULIUS CORIUM*, Fr.—Rare on dead limbs.
99. *HYPOXYLON ATROPUNCTATUM*, Schw.—Common on decayed logs.
100. *HYPOXYLON ANNULATUM*, Schw.—On dead limbs. Common.
101. *HYPOXYLON ANNULATUM*, var. *B.*—Common.
102. *HYPOXYLON MALLEOLUS*, B. & R.—Occasional on dead limbs, but not abundant anywhere.
103. *HYPOXYLON HOWEANUM*, Pk.—Not common. On a dead limb. Along with it occurs *Sphaeria barbirostris*, Desf. Not before detected in the United States until found by Ellis.
104. *HYPOXYLON SASSAFRAS*, Schw.—Common on dead *S. officinale*.
105. *HYPOXYLON EPIPHLÆUM*, B. & C.—Common on small dead limbs of *Carpinus*. Have never found it elsewhere.
106. *HYPOXYLON TINCTOR*, Berk.—A very fine species, frequenting sparsely dead magnolia. Invariably stains the wood underneath orange color.
107. *HYPOXYLON PUNCTULATUM*, B. & R.—Abundant on dead limbs and logs.
108. *HYPOXYLON RUBIGINOSUM*, Fr.—On dead wood, but not common.
109. *HYPOXYLON POLYSPERMUM*, Mont.—An elegant species, found occasionally on dead limbs. and generally associated with a *sphaeria*.
110. *IRPEX FUSCESCENS*, Schw.—(*I. cinnamomeus*, Fr.) Abundant everywhere.
111. *IRPEX TABACINUS*, Fr.—Abundant on dead oak limbs.
112. *IRPEX TULIPIFERÆ*, Schw.—On dead *Carya*. Have never seen it on any other wood.
113. *STEREUM ALBOBADIUM*, Fr.—Very fine and abundant. Found only on hickory limbs.
114. *STEREUM PAPYRINUM*, Mont.—On fallen limbs.
115. *STEREUM VERSICOLOR*, Fr.—Abundant on dead limbs and the same as the *Stereum lobatum* of Curtis.
116. *STEREUM VERSICOLOR*, var. *petaliforme*.—An elongated variety very frequently found.
117. *STEREUM OCHRACEOFLAVUM*, Schw.—Quite common on small fallen limbs.
118. *STEREUM FRUSTULOSUM*, Fr.—Abundant on old logs.
119. *STEREUM COMPLICATUM*, Fr.—Common on dead limbs.
120. *STEREUM SPADICEUM*, Fr.—On rotten limbs. Rare.
121. *STEREUM BICOLOR*, Pers.—On rotten fallen limbs. Very fine. Common.

122. SCHIZOPHYLLUM COMMUNE, Fr.—Abundant here and all over the world.

123. CERCOSPORA ROSÆCOLA, Pass.—Abundant on leaves of *Rubus villosus*.

124. CERCOSPORA SMILACIS, Thm.—On leaves of *Smilax*.

125. PANUS STYPTICUS, Fr.—Abundant on dead fallen wood.

126. PANUS DORSALIS, Bosc.—Only seen on decayed pine logs occasionally.

127. TRAMETES SERPENS, Fr.—I found this elegant species mostly on dead limbs of *Carpinus* not yet fallen, and not abundantly. There seem to be forms which might be referred to *T. rigida*, *T. sepium* and also to *P. Stevensii*. A well-marked variety occurs sparingly on *Vaccinium*.

128. TRAMETES HYDNOIDES, Fr.—A very large species, in some respects resembling *Polyporus licnoides*, but covered with long hairs on upper side. Very scarce.

129. TRAMETES SERIALIS, Fr.—Very rare. Beautiful. Some resembles *P. niphodes*, but pores smaller; border sometimes lilac-tinged.

130. PHLEBIA MERISMOIDES, Fr.—On rotten limbs. Smooth form.

131. ZYGODESMUS INDIGOFERUS, E. & E.—On the under side of decayed bark. Common.

132. ROSELLINIA AQUILA, Fr.—Abundant on fallen hickory limbs.

133. ROSELLINIA MAMMÆFORMIS, Pers.—On decayed logs. Not abundant.

134. DIATRYPE STIGMA, Hoffm.—Very common on decayed logs. Much like *D. platystoma*, but the latter has more prominent ostiola.

135. DIATRYPE TENUISSIMA, Cooke.—On dead hickory limbs. Very abundant. Might be mistaken for *Eutypa*.

136. DIATRYPE TREMELLOPHORA, Ell.—Very marked and different from *D. disciformis*, Fr., vide Ellis, in *American Naturalist*.

NEW FUNGI.

BY J. B. ELLIS AND DR. GEO. MARTIN.

ASTERINA PURPUREA, E. & M.—On living leaves of *Olea Americana*, near Jacksonville, Florida, winter of 1886. W. W. Calkins. Perithecia hypophyllous, convex-scutellate, scattered or gregarious, often collected along the midrib towards the base of the leaf, subastomous, of radiate-cellular structure, 130—150 μ in diam., margined with a narrow fringe of blanched purplish-black hyphæ, closely appressed to the surface of the leaf, which is stained of a reddish-purple tint for a little distance around: asci obovate, 30—35 x 18—22 μ , 8-spored; sporidia crowded, ovate-oblong or oblong-elliptical, 12—16 x 5—6 μ , hyaline, with the endochrome three times divided and often one of the cells with an imperfect longitudinal division.

DIMEROSPORIUM LANGLOISII, E. & M.—On living leaves of *Dianthera humilis*. Louisiana, November, 1885. Rev. A. B. Langlois, No. 73. Perithecia gregarious, depressed-spherical, rough, black, subastomous, 112—120 μ in diam., seated on a thin mycelium of brown, branching threads, forming small, dark-colored patches, thickly scattered over the upper surface of the leaf and giving it a mottled appearance; asci subsessile, oblong, often inequilateral or bulging on one side, 25—30 x 7—9 μ , without paraphyses; sporidia biseriate, clavate-oblong, yellowish-brown, 4-nucleate, 1-septate and slightly constricted at the septum, 9—10 x 3½—4 μ . Some of the perithecia contain oblong-cylindrical, 2-nucleate, subhyaline, 7—8 x 2 μ stylospores. The perithecia have a distinctly radiate-cellulose structure.

DIMEROSPORIUM NIMBOSUM, E. & M.—On living stems of *Smilax*, near Jacksonville, Florida, February, 1886. W. W. Calkins, No. 555. Mycelium composed of prostrate, brown, branching, septate threads, with short, erect branches, bearing oblong-clavate, 3—4-septate, brown conidia, 35—40 x 6—8 μ and longer (70—80 x 5—6 μ), erect, straight, septate, opaque, sterile branches, the whole forming orbicular, velutinous, black patches, ½—1 cm. across, mostly soon confluent, extending along and enveloping the stem for five cm. or more. The mycelium finally disappears, leaving a black, smooth, shining surface; perithecia collected mostly in the center of the spots, erumpent, conical, black, carbonaceo-membranaceous, rough, about one third millim. broad and high, sometimes imperfectly sulcate-striate around the prominent, mamose ostium; asci subcylindrical, 70—80 x 10—14 μ , nearly sessile and surrounded with abundant filiform paraphyses and containing eight biseriate, oblong-cylindrical, 16—20 x 5—6 μ sporidia, yellowish and 2-nucleate at first, finally brown and uniseptate and more or less constricted at the septum. The species will have to go in *Dimerosporium*, if that genus is to be retained, but its natural affinity is more with *Meliola*. *Mystrosporium aterrimum*, B. & C., appears to be the conidial stage.

STAGONOSPORA VIRENS, E. & M.—On leaves of *Quercus virens*, Green Cove Springs, Florida, February, 1885. Dr. Martin. Perithecia black, subglobose, clustered or scattered, hypophyllous, 130—160 μ in diam.; spores hyaline, ovate, ends acute, uniseptate, 15—16 x 4—6 μ .

PHYLLOSTICTA GOSSYPINA, E. & M.—On fading leaves of the cotton plant. Com., Prof. F. L. Scribner. Spots light rusty brown to pallid or nearly white, irregular, 3—5 millim. broad, surrounded by a broad reddish-purple margin, often discoloring most of the leaf; perithecia black, subglobose, collapsing, membranaceous, innate-erumpent, slightly prominent, epiphyllous, scattered, few in a spot, 65—95 μ in diam.; sporules hyaline, oval, ends obtuse, 2½—3½ x 1½—2½ μ .

PHYLLOSTICTA ARBUTIFOLIA, E. & M.—On living leaves of *Pyrus arbutifolia*. Newfield, N. J., Sept. 5th, 1885. Spots epiphyllous, small (1 millim. or less), white, scarcely showing at all on the under side of the leaf; perithecia mostly a single one in the center of the spot, subastomous, emergent, black, 70—8 μ in diam.; sporules subglobose, hyaline, 6—8 μ in the longest diam.

PHYLLOSTICTA LUDOVICIANA, E. & M.—On living leaves of *Quercus aquatica*, Louisiana, May, 1886. Rev. A. B. Langlois, No. 446. Perithecia amphigenous, but more prominent below, brown, flattened, erumpent, $150\ \mu$ in diam., scattered over large, red-brown areas of the leaf (mostly lateral) or on more definite oval or subangular spots, with a darker, slightly raised border; sporules oval, hyaline, $5-8 \times 2-3\ \mu$.

PHYLLOSTICTA ADUSTA, E. & M.—On orange leaves partly killed by frost, Green Cove Springs, Florida, March, 1886. Spots amphigenous, pallid or grayish, with a definite, narrow, yellowish-brown border, mostly marginal, 1—4 cm. across or extending along the entire margin of the leaf; perithecia amphigenous, black, subglobose, closely aggregated, sometimes confluent, covered by the cuticle, which is soon torn, $175-240\ \mu$ in diam.; sporules hyaline, oblong or subcylindrical, mostly with two or three nuclei, $10-16 \times 4-7\ \mu$; basidia $7-10\ \mu$ long. Differs from *P. marginalis*, Penz., in its larger sporules.

PHYLLOSTICTA CYRILLÆ, E. & M.—On leaves of *Cyrilla racemiflora*, Green Cove Springs, Florida, Feb. 2d, 1886. Spots large, covering the ends and edges of the leaves, red-brown at first, changing to grey-brown with age; perithecia black, subglobose, stomatous, deeply immersed, then erumpent, mostly epiphyllous, aggregated, $110-140\ \mu$; sporules hyaline, ovoid, granular, $8-10 \times 5-7\ \mu$.

PHYLLOSTICTA AESCULI, E. & M.—On living leaves of *Aesculus glabra*, Missouri (Galloway, No. 76). Hypophyllous on large, indefinitely-limited spots and areas of the leaves; perithecia punctiform, minute ($40-50\ \mu$), scattered, brown; sporules oblong-cylindrical, hyaline, $3-4 \times 1\ \mu$. Differs from *P. sphæropsoidea*, E. & E., in its much smaller sporules.

PHYLLOSTICTA SACCHARINA, E. & M.—On living leaves of *Acer saccharinum*, Missouri (Galloway, No. 86). Spots amphigenous, definite, small (1—2 millim.), white, with a rusty-brown border, scattered irregularly; perithecia epiphyllous, but visible also below, lenticular, black, $100-120\ \mu$ in diam.; sporules oblong, $3\frac{1}{2}-4\frac{1}{2} \times 1-1\frac{1}{4}\ \mu$, hyaline. *Phyllosticta Pseudoplatani*, Sacc., as shown in *de Thuemen's Mycotheca*, No. 1789, has similar spots, but they are clustered on large, reddish-brown spots. The specimens in our copy are sterile, but the larger sporules ($5-6 \times 3\ \mu$) would separate it. Of *P. fallax*, Sacc., which this must closely resemble, we have no specimen, but this too is said to have the sporules $5-6 \times 3-3\frac{1}{2}\ \mu$.

NEW LITERATURE.

BY W. A. KELLERMAN.

“THE BOLETI OF THE BIRMINGHAM DISTRICT.” By W. B. Grove, B. A. *The Midland Naturalist*, October, 1886.

“UNE NOUVELLE MALADIE DU FROMENT.” *Revue Mycologique*, October, 1886. The notice contains the diagnosis, by Dr. G. Passerini, of a new genus, as follows:

GIBELLINA, Passer., nov. gen.—Stroma vel subiculum matrici immersum, byssoideum, atro-griseum, primitis canescens, plus minus expansum, ex hyphis tenuibus fumoso-pellucidis intricatus formatum; perithecia

stromate insidentia vel immersa, contigua, contextu fibrosa, globosa, incollum subæquilongum crassiusculum rectum vel subinde flexuosum erumpentum, attenuata; asci elongato-clavati; paraphysati octospori; sporæ oblongæ didyme fuscescentes. Ab aliis generibus phæodidymus, stromate byssoides et peritheciis fibrosis, præcipue diversum. Amico carissimo Josepho Gibelli, in Archigymnasio Taurinensi Botanices, Professore Præclaro, dicatum. One species (*G. cerealis*, Passer.) is described, infesting dying culms of *Triticum vulgare*.

“FUNGI GALLICI EXSICCATI, CENTURIE XXXIXe.” C. Roumeguere. l. c.

“CHAMPIGNOUS MONSTRUEUX DES CARRIERES DE PHOSPHATES DE CHAUX DU QUERCY.” C. Roumeguere. l. c.

“CHAMPIGNOUS RARES OU NOUVEAUX DE LA CHARENTE-INFERIEURE.” Dr. G. Passerini et P. Brunaud.

“FUNGI AUSTRALIENSIS, AUCTORE.” Dr. G. Winter. l. c.

“UN HYPHOMYCETE NOUVEAU DES FEUILLES VIVANTES DU JACQUIER (STRUMELLA DARNTIANA, ROUMEG. ET WINT., nov. sp.) l. c.

“UEBER DAS MASSENHAFTE VORKOMMEN EINER MERKWUERDIGEN ASCOMYCETEN SPECIES, PEZIZA (OMBROPHILA) CLAVUS ALB. ET SCHW., UM GREIZ.” Von Dr. F. Ludwig. Deutsche Botanische Monatsschrift, August and September, 1886.

“ON THE MORPHOLOGY OF RAVENLIA GLANDULÆFORMIS.” By G. H. Parker. From the “Proceedings of the Academy of Arts and Sciences, Vol. XXII” (issued September, 1886).

The investigation was undertaken at the suggestion of Dr. Farlow, the material (on *Tephrosia Virginiana*) having been furnished in 1879 by H. W. Ravenel. The paper deals with the morphology of the teleuto-sporic stage. The heads usually occupy depressions made by the uredospores. Each one is an umbrella-like mass, connected with the host by a moderate stalk. “Three regions may be defined in it: First, the spore-mass or brown, cap-like cluster of cells at the top; second, the cyst region, composed of cells, with their transparent walls connecting the spore-mass with the third, or stalk region, consisting of a series of compressed, parallel cells, passing from the cysts to the leaf-tissue below.” *

* * “In the course of the development of the head, no feature has presented itself which cannot be easily harmonized with the proposition that the head is a bundle of fused hyphæ-bearing spores.” The paper (of fourteen pages) gives, fully, the mode of investigation of this species and the comparison of others of the same genus. It is also accompanied with twenty-one good figures, illustrating fully *R. glandulæformis*, B. & C., and partially *R. sessilis*, Berk., *R. Indica*, Berk., *R. glabra*, C. & K., and *R. stictica*, Bk. & Br.

“AN INTERESTING PERONOSPORA.” By B. D. Halsted, *Botanical Gazette*, October, 1886.

The species reported (*P. graminicola*, Schw.) was known in this country only from Minnesota. Dr. Halsted finds it abundant this year, and very “vigorous,” on *Setaria viridis*, at Ames, Iowa.

“HOME-MADE BACTERIA APPARATUS.” T. J. Burrill. l. c.

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No. 12.

SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEAE, WITH DESCRIPTIONS OF THE SPECIES.

BY J. B. ELLIS AND B. M. EVERHART.

(Continued from page 125.)

125. *DIALONECTRIA DISPERSA* (C. & E.) Grev. V, p. 33. On (pine)? bark, Maine. Rev. Joseph Blake.

Perithecia widely scattered, ovate, papillate, light red, about one half millim. high, sparingly clothed with pale, weak, glandular hairs; asci cylindrical, 70—80 x 10—12 μ ; sporidia subbiseriate or obliquely uniseriate, oblong-elliptical or almond-shaped, often more prominent on one side, 18—22 x 7—10 μ , ends subacute while lying in the asci, rounded when free, 2—4-nucleate, becoming uniseptate. Cooke finds triseptate, curved conidia 50 μ long. We have not seen them.

126. *DIALONECTRIA VITICOLA* (B. & C.) Grev. IV, p. 45. "On branches of vine, Alabama. Peters, No. 5225.

"Scattered, bright crimson, soft, collapsing laterally, seated on a thin, white mycelium; sporidia uniseriate, elliptical, uniseptate." In Grev. XII, p. 82, Cooke gives the measurements of the sporidia as 10 x 4 μ .

127. *DIALONECTRIA EUCALYPTI*, Ck. & Hark. Grev. XII, p. 82. On bark of *Eucalyptus* branches, California (Harkness).

Scattered, superficial, pale; perithecia globose, at length subdepressed (2 millim.), at first beset with papillose, hyaline hairs, finally bare; asci clavate, 8-spored; sporidia lanceolate, uniseptate, not constricted, hyaline, 16—18 x 4 μ .

128. *DIALONECTRIA SQUAMULOSA* (Ell.) Bull. Torr. Bot. Club IX, p. 20. On decaying wood of a fallen limb, Newfield, N. J., November, 1881.

Gregarious, minute (75—100 μ), pale, ovate-globose, covered, except the brownish, obtuse, slightly prominent ostiolum, with a light-colored, squam-

ulose coat; asci lanceolate, narrowed and subtruncate above, $25-30 \times 5-6 \mu$, containing eight clavate or cylindric-oblong, biseriate sporidia, $5-6 \times 1\frac{1}{4}-1\frac{1}{2} \mu$, 2-nucleate at first and probably becoming uniseptate.

(b.) *Growing on herbaceous stems, or leaves, fruits, etc.*

129. *DIALONECTRIA BRASSICÆ* (Ell. & Sac.) Mich. II, p. 374. On dead cabbage stalks left in the ground over winter and on old potato stems, Newfield, N. J., July, 1880 and 1881.

Perithecia densely gregarious, globose-conoid, not collapsing, very small ($\frac{1}{8}$ millim.), blood-red, ostiolum rather obtuse-conic, texture loosely-cellular, rose-tinted, those around the ostiolum paler; asci clavate-cylindrical, $60 \times 7-8 \mu$, without paraphyses, briefly-stipitate, obtuse at the apex, containing eight oblong, subclavate, hyaline, uniseptate, $10-11 \times 4-4\frac{1}{2} \mu$ sporidia. This was first found on the cabbage stalks and at about the same time next year on old potato stalks lying scattered over the same ground previously occupied by the cabbages. None could be found on any potato stalks in any other part of the field.

130. *DIALONECTRIA THUJANA* (Rehm.) Ascom., No. 338. Sacc. Syll. II, p. 493. On dead foliage of white cedar not yet fallen from the branches of a tree cut some time previously, Newfield, N. J. (November, 1875.) ?

Perithecia very minute, scarcely visible to the naked eye, solitary or 2-3 together, conic-globose, slightly depressed at the apex, purplish-red; asci oblong-elliptical, $60-80 \times 10-14 \mu$, with eight biseriate, oblong, two-celled, hyaline sporidia, slightly constricted in the middle and about $11 \times 7 \mu$, becoming at length subfuscous.

131. *DIALONECTRIA DEPALLENS*, Ck. & Hark. Grev. XII, p. 82. On stems of *Lupinus*, California. Harkness, No. 2432.

Scattered or gregarious, superficial, brick-red, fading out; perithecia subglobose, smooth, bare, opaque (one fifth to one fourth millim.); asci clavate, 8-spored; sporidia lanceolate subacute at each end, uniseptate, not constricted, hyaline, $22-24 \times 4-4\frac{1}{2} \mu$.

132. *DIALONECTRIA DEPAUPERATA* (Cke.) Grev. VII, p. 50. On *Yucca aloifolia*, Aiken, So. Car. Ravenel, No. 2564.

Perithecia globose, scarlet, scarcely papillate, 1-3 in a stroma (*Fusarium Yuccæ*); asci clavate; sporidia elliptical, uniseptate, $10 \times 3\frac{1}{2} \mu$; stylospores fusiform, curved, acute at each end, $25 \times 3 \mu$. We have never seen the original specimens on *Yucca* and have copied the foregoing from Grevillea.

The specimens in N. A. F., 677, on *Clethra* (or *Andromeda*?) were submitted to Dr. Cooke, who remarked that they did not differ, either in habit or in fruit, from his *Nectria depauperata*, though on a very different host plant. From an examination of these specimens, we add the following notes: Perithecia ovoid-globose, small ($160-190 \mu$), pale and furfura-ceous at first, becoming bare and pale red; ostiolum papillate and slightly darker; asci clavate-cylindrical, $35-40 \times 4 \mu$, sessile; sporidia oblong-elliptical, subbiseriate, $9-11 \times 3-3\frac{1}{2} \mu$. There are often six and even ten perithecia on each erumpent, white, byssino-grumose stroma.

133. *DIALONECTRIA GALII*, Plow. & Hark. Trans. Cal. Acad. Sci., 1884, p. 26.

Perithecia scattered, immersed, then erumpent, obtuse, pale-red; asci cylindrical, very delicate, $60 \times 5-8 \mu$; sporidia eight, uniseriate, uniseptate, pale straw-color, oblong-oval, with bluntly-pointed ends. On *Galium trifolium*, California. Harkness.

134. *DIALONECTRIA PEPONUM* (B. & C.) Grev. IV, p. 16. *Nectria perpusilla*, B. & C. Rav. Fung. Car. Exsic. IV, p. 51. On dead gourds and on tomato, So. Car. Ravenel.

Very small, scattered, scarlet; sporidia oblong, uniseptate. It looks at first sight as if seated on a smooth, white mycelium, but it is only the external coat of the gourd. Var. *aurelia* (l. c.), having sporidia continuous, is probably only the immature state of the same thing.

We add the following from an examination of the specimen in Ravenel's Exsiccati, above quoted: Perithecia depressed globose, $100-120 \mu$ in diam., ostiolum broad, papillate; asci clavate-cylindrical, $35-40 \times 5-6 \mu$; sporidia not well matured, but apparently about $10 \times 3\frac{1}{2} \mu$.

135. *DIALONECTRIA CONIGENA* (E. & E.) Bull. Torr. Bot. Club X, p. 77. On an old decaying cone of *Magnolia glauca*, Newfield, N. J., October.

Minute, membranaceous, smooth, orange yellow, lighter and collapsing when dry; asci about $50 \times 7 \mu$; sporidia uniseriate or partially biseriate above, acutely elliptical, 2-nucleate, becoming uniseptate, $7-8 \times 3-3\frac{1}{2} \mu$; ostiolum papilliform, minute; perithecia with a few weak, white, radiating hairs at the base. Differs from *N. vulpina*, Cke., in its habitat, smaller and paler perithecia and rather narrower and more acute sporidia.

(c.) Growing on cryptogamous plants.

136. *DIALONECTRIA EPISPHERIA* (Tode.) Fr. Summ. Veg. Scand., p. 388. On various *sphaeriaceous* fungi — *Diatrype*, *Hypoxylon*, *Valsa*, etc. common.

Perithecia gregarious or scattered, superficial, subsphæroid, collapsing and frequently subcompressed, soft, smooth, blood-red, about 180μ in diam., with a papilliform ostiolum; asci cylindrical, $50-60 \times 5-6 \mu$, 8-spored; sporidia obliquely uniseriate, subellipsoid, rather unequally uniseptate, hyaline, slightly constricted, $7-10 \times 4-5 \mu$.

137. *DIALONECTRIA FILICINA*, Ck. & Hark. Grev. XII, p. 101. "On stipes of tree fern, California (Harkness.)

"Scattered or gregarious, orange-colored; perithecia obovate, smooth, glabrous, subshining, scarcely papillate; asci cylindrical, 8-spored; sporidia elliptico-cylindrical, obtuse at each end, hyaline, $8 \times 2\frac{1}{2} \mu$." Our specimens from Dr. Harkness have the asci about $40 \times 5 \mu$; sporidia mostly biseriate, 3-4-nucleate, becoming uniseptate, $7-10 \times 2\frac{1}{2}-3 \mu$.

C. Sporidia elongated, guttulate or septate. (*Calonectria*.)

138. *DIALONECTRIA CURTISII*, Berk. Grev. IV, p. 46. On *Zea*, So. Car. Ravenel.

"Minute, erumpent, scattered; asci lanceolate; sporidia oblong, curved, with four nuclei, $12 \times 2 \mu$." We have seen no specimens of this.

139. *DIALONECTRIA CHLORINELLA*, Cke. Grev. XI, p. 108. Rav. F. Am., 736. On bark of *Ulmus*, seaboard of So. Car. Revenel.

Scattered, superficial, globose, lemon-yellow; perithecia woolly-tomentose, papillate, with ostiolum bare; asci clavate; sporidia elongated-elliptical, obtuse at each end, straight, or a little curved, 1—3-septate, hyaline, $18-20 \times 5 \mu$. This species also ranges northward. It has been found on blackened wood of decaying oak limbs and on wood of *Rhus*, at Newfield, N. J., and has also been sent on rotten wood from Canada by Prof. Macoun. Prof. C. H. Peck has also found it in New York state. It might, with propriety, be placed in the genus *Lophiostoma*, as it has the peculiar compressed ostiolum of that genus and its sporidia are also indicative of that relationship. The specimens in our copy of Rav. F. Am. are immature, though evidently the same as the Newfield and Canada specimens. The latter have the sporidia fusiform, slightly curved, subhyaline, 1—3-septate and constricted at the middle septum. $25-35 \times 7-8 \mu$ —very few less than 30μ long; asci $100-120 \times 12-15 \mu$, with abundant paraphyses. Really this should be placed in *Lophiostoma*.

140. *DIALONECTRIA ERUBESCENS* (Desm.) Sacc. Syll. II, p. 545. On the under side of living leaves of *Quercus laurifolia*, *Myrica cerifera* and *Olea Americana*, Florida (Dr. Martin and W. W. Calkins). Mostly on mycelium of *Meliola*.

Scattered or gregarious, superficial, with white, wooley, radiating hairs at base; perithecia minute, pale red, globose, finally collapsing, soft, glabrous, with a papilliform ostiolum; asci clavate, $35-40 \times 7-8 \mu$; sporidia oblong-fusoid, straight or slightly curved, hyaline, 3—4-nucleate, becoming 1—3-septate, ends subacute ($10 \times 3 \mu$, Sacc.) Specimens on *Olea* have the sporidia $12-16 \times 2\frac{1}{2}-3 \mu$. *Calonectria leucorrhodina* (Mont), Sacc. Syll. II, p. 548, according to So. American specimens from Spegazzini, scarcely differs from this, except in its epiphyllous growth.

141. *DIALONECTRIA DIPLOA*, B. & C., var. *diminuta*. Grev. IV, p. 46. On some sphæria, on alder, So. Car. Ravenel.

"Very minute, scarlet; asci lanceolate, but obtuse; sporidia sometimes larger, binucleate, at length uniseptate, in one row, or smaller, biseriata, quadrinucleate, $25-30 \mu$ long."

142. *DIALONECTRIA FULVIDA*, E. & E. Journ. Mycol. I, p. 140. On bark of decaying oak limb lying on the ground, Newfield, N. J., Oct. 7th, 1885.

Perithecia superficial, gregarious, subglobose, small (one sixth millim.), tuberculose-squamulose, light yellow, collapsing when dry; ostiolum large, but not prominent; asci oblong-cylindrical, nearly sessile, obtuse, about $75 \times 10-12 \mu$, surrounded by indistinct paraphyses;

sporidia eight in an ascus, fusiform, hyaline or nearly so, slightly curved, $38-50 \times 3-3\frac{1}{2} \mu$, tapering from the middle to each end, nucleate, becoming about 8-septate. The specimens were growing on the bark of an old swelling caused by *Dichæna strumosa*, Fr.

143. *DIALONECTRIA COCCICOLA*, E. & E. Journ. Mycol. II, p. 39. On scale lice on bark of living orange trees, Florida. Com. Prof. F. L. Scribner.

Perithecia cæspitose, membranaceous, about one third millim. in diam. and one half millim. high, flesh-color, becoming dirty buff when mature, obovate, astomous, surface roughish, with a few scattered, white, rudimentary hairs, or at length bald; asci clavate-cylindrical, $150-190 \times 20 \mu$, with abundant, rather stout paraphyses; sporidia eight in an ascus, clavate-cylindrical, multinucleate, hyaline, $110-140 \times 6-7 \mu$ at the upper end, attenuated below. The groups of perithecia are seated either on the shells of dead insects or on the bark itself, with a subiculum more or less distinct, composed of white, decumbent or prostrate hairs of the same character as those found on the perithecia themselves. The species seems to be quite distinct from any of those described under the subgenus *Ophionectria*, where this belongs.

144. *DIALONECTRIA FIBRISEDA*, Schw. Syn. N. Am., 1542. Among the loosened fibres of chestnut bark, Bethlehem, Pa. (Schweinitz). Allied to *Nectria sanguinea*.

Very minute, scattered, blood-red, pellucid, globose-ovate, papillate, adhering in dense clusters to the fibres of (dead) chestnut limbs from which the epidermis has peeled off, entirely glabrous, finally collapsing, scarcely visible to the naked eye. Of this species, nothing is known to us except the description above quoted.

Cooke, in his synopsis, mentions a *Nectria Smilacis*, Sz. We find no such species in Schw. Synopsis.

(To be continued.)

OBITUARY.

With feelings of deepest regret, we have to announce the death of our colleague and friend, Dr. Geo. Martin, who died at his home in West Chester, Pa., Oct. 28th, 1886, in the sixtieth year of his age. Since 1878, Dr. M. has devoted much time to mycological studies, especially to the examination of the parasitic leaf fungi, and only a few days before his death had completed a "Synopsis of the North American Species of *Septoria*," as a continuation of the series of mycological papers he had already contributed. Having been for some years past in constant correspondence with him, we had come to place great reliance on his opinion

in the determination of these often doubtful productions and cannot as yet fully realize how much his advice and assistance will be missed.

The following brief sketch of his life is taken from a West Chester paper :

“Dr. George Martin was born near Claymont, Delaware county, Pa., and received his early education at the Westtown Friends’ Boarding School, after which he became a student at the Pennsylvania University, where he graduated in medicine about 1847. He first practiced his profession at Concordville, Delaware county, where he remained about three years. Owing to delicate health, he next became connected with the Fifth Street Dispensary, Philadelphia, in which he remained some five years, at the expiration of which time he engaged with his cousin, John M. Sharpless, in the latter’s chrome works in the city of Chester. During the war, he was connected with soldiers’ hospitals in Chester, and in which he rendered efficient and untiring services. In 1866 he came to West Chester, where he continued to live until the time of his death. During the last eight or ten years, his health was such as to lead him and his wife to pass the winter season in Florida, they leaving here in the fall and returning late in the spring. This year his disease—that of kidney troubles—became more alarming during the summer, until about ten days ago, when it became evident that he could not survive. At the time of his death, he was one of the managers of the Pennsylvania Training School at Media, also a bright member of the Chester County Medical Society, and during his active practice was a member of the College of Physicians, of Philadelphia.

In his demise, the medical profession loses one of its shining lights, he having devoted many years to schooling himself in the knowledge relating to all that pertained thereto. In scientific pursuits, he was also a close and learned student, as well as a botanist of such note as to lead him into close associations with the leading botanists of the day, his principal study in this department being that of fungi. Dr. Martin was a genial and good citizen. Plain and retiring in his manners, he was beloved by all and honored at home and abroad, and well may it be said that a truly good man has been taken from our midst.” J. B. E.

CORRECTIONS.

In the “Catalogue of Lichens” (p. 112), occur typographical errors kindly pointed out by Mr. Willey, who is in that article referred to as having identified most of the species. He disclaims responsibility for the list, especially for Nos. 44, 45, 50, 53, 57, 63 and 68. Correct errors as follows : Place a “?” before 18 ; in 38 change “r” in *Eristathiana* to “u ;” in 55 erase final “i” in *Augustinii* ; in 69 change “e” in *Mycoperum* to “o.”

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